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THE ROLE OF CORPORATE VALUES TO CORPORATE SOCIAL RESPONSIBILITY AND DIVIDEND POLICIES THAT AFFECT STOCK RETURNS

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ABSTRACT
The purpose of this study is to analyze whether firm value mediates the effect of Corporate Social Responsibility (CSR) and dividend yield on stock returns. The samples are 12 companies; they chosen by purposive sampling method. The data is processed by panel regression and Sobel Test using eViews 9.0. The results showed that firm value is mediating the effect of Corporate Social Responsibility (CSR) to stock return. The second result is firm value isn’t mediating the effect of Dividend Yield to stock return.

KEY WORDS
Corporate social responsibility, dividend yield, firm value, stock return.

One of the goals of a company is to prosper the shareholders. Shareholders have believed to invest their money in a company and hoping that their investment will grow in a certain time. The company must run the operational activities well, so the company can generate profits and realize the expectations of shareholders. In running its operational activities the company also has several obligations, one of which is carrying out CSR (Corporate Social Responsibility) activities. The obligation has been regulated by the government in UU RI No.40 of 2007 Pasal 74 about Limited Liability Company, that is, the company that carries out its business activities in and / or related to natural resources must carry out Social and Environmental Responsibility, if it does not carry out the obligations referred to will be subject to sanctions in accordance with the provisions of the legislation.

According to Chen and Lee (2017) there is a positive influence between CSR and financial performance of a company. If the company has better CSR activities, the better reputation of a company and will get support from the government. As a result, the company's financial performance will increase which will also affect profits and have a positive influence on the welfare of shareholders.

Investors will be satisfied with the payment of dividends received each period. The amount of dividend payment can be viewed positively or negatively by investors. If dividend payment is too large, then the assumption of retained earnings held by the company in that period is a little so that the capital to develop its business is reduced, and has a negative impact from the investor's perspective. Conversely, if the dividend amount and frequency are very small, the welfare of investors will decrease.

Stock returns received by investors not only from dividends, but also from capital gains. According to Tax Differential Theory presented by Litzenberger and Ramaswamy stated that investors prefer capital gains rather than dividends, even though the company decides to distribute dividends, investors tend to choose dividend payments in small amounts so that the retained earnings remain to develop larger businesses.

CSR and dividend payments made by the company will affect the value of the company which will also affect stock price movements, and affect the stock returns received by investors. In this research, we want to examine how the effect of CSR and dividends is the costs that must be spent by the company on the value of the company that has a role in influencing stock returns.
THEORETICAL REVIEW

In this research, there are four variables, CSR and Dividend Yield are independent variables, company value is a mediating variable, and stock return is the dependent variable. The following is the framework of this research:

![Figure 1 – Corporate Social Responsibility (CSR)](image)

Corporate CSR is expected to provide long-term benefits, positive relationships with stakeholders must be maintained to minimize conflicts that will occur (Gitman & Zutter, 2015). According to Lins, et al (2017) with companies implementing CSR activities that are beneficial to the environment can increase investor confidence in the company, the company's image will look better in the eyes of the public and will produce something positive. At present the responsibility of the company must rest on the triple bottom lines, namely corporate responsibility on social, environmental and financial aspects so that each company is required to disclose information about corporate social responsibility or Corporate Social Responsibility (Hartoyo, 2016). To measure the Corporate Social Responsibility Index used categories derived from the GRI (Global Reporting Initiative) indicator.

\[
CSRD_{ij} = \frac{\sum X_{ij}}{n_j}
\]

**Dividend Yield.** Investors want a relatively stable dividend distribution because it reduces uncertainty about the expected results of investments made and can also increase investor confidence in the company so that the value of shares also increases. Dividend yield is one indicator that is often used by securities analysis to measure the performance of a company in distributing profits on income of shares traded in the capital market. The yield dividend in this study can be formulated as follows:

\[
\text{Dividend Yield} = \frac{\text{Dividend Per Lembar Saham}}{\text{Harga Saham Per Lembar Saham}} \times 100\%
\]

**Company Value.** To measure the value of a company in this study, Tobin’s Q method is used as a valuation ratio (Valuation Ratio), which is the most comprehensive measure to assess the work of a company, because the ratio reflects a combination of risk-ratio effects and return-yield ratios. If the value of Tobin’s Q is more than one company, this will stimulate investment, whereas if the value of Tobin’s Q is less than one, it will reduce investment. Tobin’s Q calculations are as follows:

\[
\text{Tobin’s Q} = \frac{\text{Market Value of Equity + Book Value of Debt}}{\text{Book Value of Total Asset}}
\]

**Stock Return.** Based on the two concepts by Tandelilin (2011), the total return of an investment can be calculated by using yield and capital gains obtained from an investment. In this study, the researcher calculates stock returns by using actual return, which is the difference between the current stock price and the stock price in the previous period or can be formulated as follows:
\[ R_{it} = \frac{P_t - (P_{t-1})}{P_{t-1}} \]

Where: \( R_{it} \) = Stock return in the t period; \( P_t \) = Stock price in t period; \( P_{t-1} \) = stock price before t period.

**METHODS OF RESEARCH**

The population in this research includes listing companies on the Indonesia Stock Exchange (IDX) during the 2012-2016. The sampling method used by the author in this research was using purposive sampling method. Samples taken from populations that have met the criteria there are 12 companies. This research will use panel data regression because the data consists of time series and cross section.

In estimating panel data regression there are three models, namely Common Effect (CE), Fixed Effect (FE), and Random Effect (RE). To choose the best model, Chow test, Huasman test, and Lagrange test were conducted. In addition to conducting panel data regression, in this study a Sobel test was conducted to determine whether the company value variable mediates the effect of CSR variables and yield dividends on stock returns. The first step is by calculating the indirect coefficient value, after that it looks for the standard error value from the indirect effect coefficient.

\[ Sp2p3 = \sqrt{p3sp2 + p2sp3 + sp2sp3} \]

\[ t_{hitung} = \frac{p2 X p3}{Sp2p3} \]

If the result of t count is greater than t table with a 0.05 level of significance, it can be concluded that the mediation coefficient is significant which means that the mediating variable influences the influence of the independent variable on the dependent variable.

**RESULTS AND DISCUSSION**

To prove the first hypothesis is whether the company value variable mediates the effect of CSR on stock returns, regression and Sobel Test are carried out with the following results:

| Dependent Variable | Company Value | Stock Returns |
|--------------------|---------------|---------------|
| Model              | Random Effect | Fixed Effect  |
| Independent Variable | CSR          | CSR          | Company Value |
| Coefficient        | 0.005095      | -0.507319    | 92.72008      |
| Standard Error     | 0.001770      | 0.416999     | 31.49466      |
| t Statistics       | 2.878643      | -1.216594    | 2.943993      |
| Probability        | 0.0056        | 0.2300       | 0.0051        |

*Source: Eviews 9.0.*

Standard error from the indirect effect coefficient:

\[ Sp2p3 = \sqrt{P3sp2 + P2sp3 + Sp2sp3} = 0.236 \]

The t-statistics value of the influence of mediation:

\[ t = \frac{p2 X p3}{Sp2p3} = \frac{0.005095 X 92.72008}{0.236} = 2.0017 \]
Because the value of t count of 2.0017 is greater than the value of t table of 1.67155, then there is a mediating effect of the company value variable in the effect of CSR on stock return. CSR variables directly do not affect stock returns, but indirectly CSR influences stock returns by mediating firm value variables. CSR has a significant positive effect on company value. The greater the CSR activities carried out by the company, the better the company's reputation in the eyes of the public and investors. This causes an increase in the value of the company. The results of this study support the results of Chen & Lee (2017) research, namely that the higher the company invests in the form of CSR will increase institutional shareholders, and develop the size of the company which results in the growth of profits and increasing corporate value. The value of the company has a significant positive effect on stock returns, the higher the value of the company, the higher the investors value the company so that investors want to buy shares at a higher price. So the increasing value of the company will cause an increase in stock returns. This result is different from the results of the research from McMillan (2017), which is that firm value has a significant negative effect on stock returns and Rahman & Mustafa (2018) states that firm value does not significantly influence stock returns.

Next, to prove the second hypothesis is whether the company value variable mediates the effect of the Dividend Yield on stock returns, Sobel Test is carried out with the following results:

Table 2 – Results of Multiple Regression Dividend Yield and Company Value – Stock Returns

| Dependent Variable | Fixed Effect | Random Effect |
|--------------------|--------------|---------------|
| Stock Returns      | Coefficient  | -0.012215     |
|                    | Standard Error | 0.005714      |
|                    | t Statistics  | -2.137857     |
|                    | Probability   | 0.0368        |

Source: Eviews 9.0.

Standard error from the indirect effect coefficient:

$$Sp^2P^3 = P^3^2Sp^2 + P^2^2Sp^3 + Sp^2^2Sp^3^2 = 27.008$$

The t-statistics value of the influence of mediation:

$$t = \frac{P^2 X P^3}{Sp^2 P^3} = \frac{0.012215 X 66.78055}{27.008} = 0.0303$$

Because the value of t count of 0.0303 is smaller than the value of t table of 1.67155, then there is no mediating effect of the company value variable in the effect of the Dividend Yield on stock returns.

CONCLUSION AND RECOMMENDATIONS

The value of the company mediates the effect of CSR on stock returns. CSR variables directly do not affect stock returns, but indirectly CSR influences stock returns by mediating firm value variables. CSR has a significant positive effect on company value. Dividend yield directly affects stock returns, and firm value does not mediate the effect of dividend yield on stock returns. Dividend yield has a significant negative effect on stock returns. From the results of this study, the authors recommend to the issuers to pay attention to the activities of CSR and dividends which are costs for the company because it affects stock returns.
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THE ACHIEVEMENT OF COMPETITIVE ADVANTAGE ON JAPANESE CULTURE FESTIVAL THROUGH VALUE CHAIN ANALYSIS CONCEPT

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ABSTRACT
The purpose of this study was to obtain a value chain model of marketing, production and supporting activities at the Japanese Culture Festival and to seek answers to the ability of the Ennichisai festival to maintain the continuity of the festival for more than seven years without imposing costs on visitors. The discussion in this study uses contingency theory and the concept of value chain analysis as the basis for discussion. This research was examined using interview methods and documentation. The approach taken is a qualitative approach with case study and ethnographic methods. The researcher also used questionnaires as a supplementary data source that was described qualitatively. The results of this study are Ennichisai's cultural festival achieving competitive advantage with the uniqueness of Japanese culture that is able to make production costs in the production process more efficient, so Ennichisai is able to compete in the Industrial Festival scope in Indonesia.

KEY WORDS
Competitive advantage, Japanese culture festival, value chain analysis.

Japanese culture is a culture that is in great demand world-widely. Cultural flow originated from Japan to various parts of the world, especially Asia, is an interesting phenomenon to be discussed in the era of globalization (Saleha, 2016). Japan wield various unique ways to promote its culture, one of which is translating its promotional material into local language. Regional collaboration between media companies and promoters also give a big impact toward cultural spread. They role as a tool to distribute goods and services commodity (Otmazgin, 2008). Japan pop culture wield a big influence and it is a combination of television programs, comics, and modern music (Ngurawan et al., 2016).

One of the Japanese pop and traditional culture festivals in Indonesia is Ennichisai. An annual festival: that is held in Little Tokyo area, Blok-M, South Jakarta since 2010. This festival is a non-profit festival and focused on cultural exchange of Japan and Indonesia through foods exhibitions and art shows. The profit of this festival is used for social activities which mean to help the Blok-M region developmental.

In accountancy, according to Finney in a book written by Johnson (1932), there was going concern term which means unlimited sustainability. Japanese festival Ennichisai is a form of art of mankind that wields a power to maintain its survival. The event organizer seems to be able to make best decisions to increase the value of the festival, so it would still be competitive to similar annual festivals. A way to make a best decision is to effectuate management accounting function by identifying, collecting, measuring, and obtaining helpful information for users of internal organization (Hansen et al., 2009).

The development of an organization is the result of organization integration theory that fulfills each other through various adaptations to the discovering of best concept that fits to condition and characteristic of organization. Although, theoretically, almost all aspects of organization have been learned by experts to the discovering of specific understanding, however, theory and reality would be not resulting in an appropriate conclusion. That concept is the main core of contingency theory, since every organization owns a different resource to achieve its goal (Istanti, 2018).

Management accounting introduces a concept called strategic cost management. This concept explains that increasing consumer value to create sustainable competitive advantages could be created in various ways, one of which is value chain analysis. Value
chain is a series of activities needed to bring a product or service from the concept stage to the production stage (Kaplinsky et al., 2001). Porter (1985) mentions that value chain is an activity that adds value to the company from process of obtaining sources to finishing process, in which consumers could obtain some benefits from it. The value chain point of view discusses the whole activity, so that good relationships and collaboration between organizations, suppliers and consumers could be established.

The value chain could be observed through main and supporting activities. The main activity is involved in the manufacturing of physical products or services, sales, and deliveries to buyers and after-sales services. The main activities cover internal logistics, operations, outside logistics, marketing and sales, and service. The main activities in the festival include stage and area production activities, marketing, promotions and publications, and the preparation of traditional and traditional stages. Supporting activities are activities that complement the main activities with various functions such as human resources, buyers, technology development, and administrative support (Porter, 1985). Supporting activities include organizational infrastructure, management of human resources, technology development, and procurement activities. Another important component in implementing an event is marketing. Marketing is a social and managerial process that involves individuals and groups to get the needs through creation and reciprocal exchange of products and values (Kotler et al., 2010).

Ennichisai is a Japanese cultural festival with free of entrance fee, however, this festival wields high profit and sustainability. This is rather interesting to conduct value chain analysis at the festival. Therefore, this study aims to discover the value chain model of Ennichisai Japanese Cultural Festival which is discussed comprehensively.

METHODS OF RESEARCH

This study uses a descriptive qualitative case study method. Qualitative research is carried out since this type of research could observe the problems in detail on the research subjects and objects (Creswell, 2012). This study was carried out by preliminary surveys, literature studies, field research and documentation. The object in this study is the value chain at the Ennichisai Japanese Cultural Festival in Blok M, South Jakarta. The Ethnographic approach was also chosen by the author since this study also involved values, behavior, beliefs, language and cultural exchange. Through ethnography, the author could comprehend the view from the author of prior studies. Ethnography realist is used in this study as this approach is able to support the author to collect an overview of the object of study through the involved people (Creswell, 2012). Study subject is a national-scale festival with rather complex activities. Study informants for the interview are initiators, marketing and creative directors, production directors, sponsorship representatives and booth tenant representatives.

Yin (2011) states that the analysis of evidence (data) is conducted by testing, categorizing, or recombining the evidence which is used as an analysis. The techniques of data analysis are:

- Identifying, describing and establishing model the processes of primary and secondary activities related to marketing and production at the Ennichisai Japanese Cultural Festival;
- Identifying the value chain in the activities at the making process of Ennichisai Festival, then explaining the advantages in each activity;
- Explaining the potential for developing competitive advantages. Triangulating the data by comparing the results interview transcripts from each informant, collected document and video documentation from the festival's committee.

RESULTS AND DISCUSSION

Ennichisai is the largest Japanese cultural festival in Indonesia which was established in 2010. Japanese cultural festival got 300,000 visitors in two days.
Ennichisai consists of two words, *Ennichi* which means a temple festival and *Sai* which means big or magnificent festival. Like a community that wields faith, they take certain days to conduct worship activities. Japanese people hold temple services every month. Besides worshipping, they also used the moment to send prayers to deceased relatives. When the activity takes place, around the temple, many people also sell various kinds of worship, food and beverages.

The Ennichisai Festival was established from the desire of several entrepreneurs in the Blok M region to improve the economic conditions of Japanese companies that were sluggish in 2009, and as a consolation of longing for Japanese citizens living in Indonesia for a festival. In the profit-oriented festivals on service industry, organizers generally earn most of their income through ticket sales. However, Ennichisai does not charge fees to visitors.

"In the beginning, my friends and fellow Japanese restaurant owners in Blok M area only gathered and told a story, until we began to question the Japanese festivals in Jakarta which charge entrance fee, because there is no entrance fee in Japan."

Based on the interview, there is an interesting point: where in Japan, organizing a festival of Japanese culture does not charge fees. Sources of funds were obtained from the contributions of entrepreneurs in the area around the festival.

The implementation of the Ennichisai festival did not start flawless at first. Mr. Daisei Takeya assisted by Mr. Takeshi Murohara and Ms. Daisei Takeya had to work hard to get funding.

"...I used to have a VIP restaurant on Blok-M called Royalty and the price of food was also rather expensive. Most of the people who came to this restaurant were the bosses of large Japanese companies in Jakarta. At that time, I said to them, I want to hold a Japanese festival in Blok-M, so I want to ask for a donation. They answered, "oh okay", but there was one thing that was difficult, the impression of Blok-M was a place of night entertainment, so they thought it was not good for the company’s image. Nevertheless, personally, they continue to make donations. I also visited each of the other Japanese companies to do the same, and thankfully, they also contributed. If we (Japanese) go to the Blok-M area, we always feel safe, that’s because the people there also protect us. I always say to them, "we are Japanese, and work in Indonesia; we have to give them blessings"."

Ennichisai suffered a considerable loss in the first year. At that time, some of the initiators of Ennichisai had the desire not to continue the festival, this wish was conveyed by Mr. Takeshi Murohara. However, the desire to not to continue Ennichisai was not realized as there were many requests from volunteer festivals who wanted this event to be held again. Although they suffered a financial problem in the first year, however, they managed to attract the attention of people by getting approximately 40,000 thousand visitors.

This achievement and enthusiasm made Mr. Daisei Takeya and his friends continue to hold this festival until 2018. A significant increase in visitors was also one of the motivations to continue to hold this event.

As time passed by, Ennichisai began to be accepted by Jakarta people, quoted from rri.co.id. The Ennichisai Festival attracted the attention of the local government (South Jakarta regional government). This makes the regional government give full support because the Festival is considered to be able to maintain relations between Indonesia and Japan. In 2016, the South Jakarta government began to schedule the Ennchisai Festival as one of the local agendas. The following is a representation that shows the progress of the Ennichisai Festival every year.

The survey result shows that the tenants of booth were obtaining high profit margins, for above 90%. It proves that 21% of booth tenants were very satisfied, 45% were satisfied, 25% felt quite satisfied and only 9% of the total 53 respondents felt dissatisfied. Followed by their ability to get profits as much as 58%, 26% turnover, and the remaining 15% suffered losses. The result also reflects their desire to participate Ennichisai again by 85% percent of those who are willing to return, and 15% are not.

At the festival, the organization of entertainment is carried out such as organizing entertainment in general. However, most of the viewers at Ennichisai use the benefit exchange model in the process. The artist’s management requested time to appear on stage
and the booth to promote their Talent Artist, by not charging transportation and accommodation fees to the organizers of the Ennichisai festival. The following is a statement from Mr. Daisei Takeya regarding the performance at Ennichisai:

"In the beginning, in order to invite taiko school to appear at Ennichisai, we had to pay eight million rupiahs. For a non-business festival, the number is quite big for us. The following year, we did not call them, so they asked, "Why were we not invited to the festival again?" I replied, "We did not have enough money." Then they understood and in fact their students also needed a place to be able to show publicly, then they offered the show for their students at Ennichisai festival. We, as the organizer, provided a stage and foods."

The following is a statement from Mrs. Emi Takeya:

"... talent agencies from Japan usually submitted their artists to be able to perform at Ennichisai at their own expense. This was intended for them as a way for their artists to be known in countries outside Japan. We, as the organizer, provide a stage for them and booth so they were able to promote their artists."

The following is a statement from Mr. Takeshi Murohara:

"... for stage shows, up to 80% of performers did not pay, but if a lot of performers from Japan came here, and because of the news would be sent back to Japan, please help us by introducing Japanese culture to Indonesians. However, we had to pay for professional drums and taiko, since we had to show them to Indonesian people, even though they only ask for compensation for accommodation costs."

The ability of Ennichisai festival to provide a good stage and a large number of visitors gave the organizer a high demanding power to the performers. This could provide a good impact on the festival's financial performance. Based on the calculations, with this demanding power, Ennichisai was able to save 129% on production costs of traditional stage content, and 143% on modern stage content. The savings contributed significantly to the ratio of Ennichisai's profit margin.

Ennichisai could provide revenues from activities other than the booths sales. The activities were souvenir sales, and donations from colleagues of Mr. Daisei Takeya. Revenue was earned from Ennichisai T-shirts and knick-knacks selling; other revenues were earned from bank interest and other micro transactions, while Honoufuda is a voluntary contribution from colleagues of Mr. Daisei Takeya. The following are the results of an interview with Ms. Emi Takeya regarding Honoufuda:

"There is one habit that is still ongoing to get funding, namely Honoufuda, the contribution of Daisei-san's friends in Indonesia and Japan. Honoufudai means an Offering Card that is used as a gratitude for their contribution. We made them a name plates and installed the plates in front of Daisei-san's restaurant for a year."

Japanese people hold a high enthusiasm to participate in a matsuri (festival). According to Kunio (1977), Matsuri actually means for a religious ceremony to invite deities, or the event of a meeting between humans and gods. Through Matsuri, Japanese people could feel the presence of gods in life. Currently the organization of matsuri possesses two meanings: "Nihon Jin Rashisha" which means the peculiarities of the Japanese and "Kokoro Zuku Koto" which means the consciousness contained in the soul of the Japanese people. The purpose of distinctiveness and awareness of a person.

In the concept of value chain analysis, it is stated that there are four important scopes that deal a strong impact on focused competitive advantage. The scope is segment coverage, vertical coverage, geographical coverage and industry coverage.

1) Segment coverage related to the segmentation of products offered and the types of buyers served. The different needs or value chains needed to serve different products or buyers could produce focused competitive needs. The following is the comment of Mr. Daisei Takeya regarding the segment coverage at the Ennichisai Festival:

"...one of them said, Daisei tried to make Matsuri similar to Japan. We are Japanese, and we work in Indonesia, we have to give them blessings."

The interview reveals the scope of the segment to achieve: the people of Indonesian. The type of product offered is a festival of Japanese culture which is targeting the community in Blok-M region (South Jakarta).
2) Vertical coverage according to Porter (1985), vertical coverage is all activities carried out independently and not dependent on other organizations. Ennichisai is an activity in the form of a festival, and is classified as a business in the form of services. The form of vertical coverage in this festival is that the overall production process is carried out by a team from Mr. Daisei Takeya. The initiator of the festival could have recruited the services of an event organizer, yet it was not realized. Festival organizers prefer to learn from the very beginning, since Japanese people assure that Japanese culture festivals could only be best-served by Japanese people. The decision to arrange the Ennichisai festival without event organizer services was the best decision, since in the long term, the benefits could be utilized maximally by the organizers for development or social purposes.

3) Geographical coverage, Ennichisai is a festival full of Japanese culture that needs human resources who comprehend on how to organize Japanese cultural festivals. Jakarta is the capital city of Indonesia which an international airport is provided. This provides a strategic position for Japanese people to be able to directly contribute the festival without incurring additional costs to come to a particular city. The characteristics of Blok-M region that is rife with Japanese employees could make it convenient for the festival to obtain the necessary resources.

4) Coverage of Industry, Ennichisai is the largest Japanese festival in Indonesia that does not charge entrance fees, compared to similar festival which charged entrance fees. However, it could maintain its existence in the festival industry. Based on the results of the study, the position of Ennichisai Festival seems to be better than non-profit festivals that charge entrance fees and similar paid profits. It shows that Ennichisai seize a unique competitive advantage and could not be imitated perfectly in any other Japanese culture festival industry.

CONCLUSION

Based on the interview with Ennichisai's organizer team, the results of a field survey of financial statement analysis, related journals and literature studies conducted by the author, the conclusions are:

Ennichisai is a festival that contains elements of Japanese culture, Matsuri. Matsuri possesses a positive meaning and enthusiasm for Japanese citizens to participate in the festival. The positive meaning is reflected in the spirit of the committee and the content of the Ennichisai festival. Reflecting these cultural elements indirectly forms the competitive advantage of the Ennichisai festival to be able to compete in creating good value for the festival itself and their consumers.

Ennichisai uses the concept of sales in marketing activities. The team makes maximum efforts to increase the number of sales when resistance occurs to its customers. The role of Mr. Daisei Takeya and Mr. Takeshi Murohara in using persuasive methods to convince sponsors was very influential in the success of sponsorship sales at the beginning of its establishment.

Production activities at the festival are carried out in the same way as the festival's production process in general. That is to conduct data collection on festival needs, then conduct a vendor search that is in accordance with the needs of the festival which offers the best quality.

Ennichisai possesses a strong appeal for the community so they are willing to participate. A participation in organizing the festival is by volunteering for the event. T-shirt, as an appreciation of participation, is able to provide cost efficiency in human resource management activities by 27%.

Ennichisai does not charge tickets for visitors; however, it could maintain its existence in the festival industry due to the strength in creating high value for its consumers; so that the main source of income is from booth sales and sponsorship package sales. The uniqueness of Japanese culture also provides entertainment that brings many visitors. The large number of visitors to the festival also gave a strong attraction to the performers and is able to provide production cost efficiency by 129% in production activities on the traditional stage and 143%
on the modern stage. The efficiency value makes Ennichisai is able to maintain its existence in similar industries with a margin profit value by 11%

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EFFECT OF IMPLEMENTATION OF ENTERPRISE RESOURCE PLANNING SYSTEM ON QUALITY OF ACCOUNTING INFORMATION

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ABSTRACT
The purpose of this study is to determine the effect of ERP system implementation on accounting information quality. ERP system is a technology that serves to coordinate and integrate the information in the company and between companies in the business area of the process. ERP is a complex and expensive system, so in its implementation required a user who is able to apply it. This research is an empirical research using purposive sampling to gain the data. The respondents of this research consist of 45 users in one of Manufacturing Industries in East Java. The hypothesis in this research were tested using regression analysis, while for the hypothesis test used t test. The results of this research showed that significantly affect ERP system implementation to the quality of accounting information.

KEY WORDS
Enterprise resource, planning, accounting, information, quality.

The business processes of a company is strongly influenced by two factors, namely internal and external factors. Internal factors are factors that arise within the company itself as the company's operations, employees and so on. While external factors are factors that come from outside the company and is a factor that can affect the company directly to business processes such as competition, technological developments and so on. Along with current technological developments, every organization considers that the information system is essential for the survival of their persusahaan. With the development of information systems related to accounting and useful for the operational organization.

Enterprise Resource Planning (ERP) is a software package of integrated applications to be used widely in the organization. Enterprise Resource Planning (ERP) system as a whole is a fully integrated package and supports the entire business process automation in the existing standards in the organization. The system is able to present a holistic vision of the company's business by sharing a common database and integrated. In the era of the ERP system, the amount of information becomes more important, and the data is updated and relevant. Thus, AIS provides a historical accounting information and forecasting that covers financial accounting, management control and financial analysis.

One supporting the success of the company's management and help investors monitor the activity of the company is to have an information system capable of integrating all activities of the company. One of them is the Enterprise Resource Planning (ERP). The main purpose of ERP is to automate business processes, deploy the enterprise data in real-time. Although conventional information systems can manage transaction processing, reporting and information in decision-making, information systems is not sufficient as a result of changes in the business environment that has been discussed previously (Spathis and Constantinides, 2004).

Data, processes and users is a permanent factor in the successful implementation of ERP, while the ERP adoption, adoption process, the resistance organization is a success factor that can be changed in ERP implementation. Other studies Zhe Zang, et al (2005) states ERP success is determined by the organization of factors of environment, user environment, system environment and vendor environment.

Based on this background, the study entitled "Effect of ERP implementation of the quality of accounting information." and description of the background of this research, the
formulation of research problems that can be identified, namely: Whether the implementation of ERP systems affect the quality of accounting information?

LITERATURE REVIEW

Agency Theory or the agency theory to explain the relationship between the agent by the principal. In this theory each party either principal or agent acting for his own benefit. Agents will try to increase the consideration received in the form of salary, bonuses or even investment in the company.

Basically, the principal wants to know all information including management activities related to the funds in the company. Based on the principal management responsibility report assessing the performance of management, but often there is a tendency of management to commit acts that violate the auditing standard is to make the report look good, so its performance is considered good. Based on these principals do testing conducted by independent parties such as independent auditors to reduce or minimize the fraud committed by management when making financial.

Abdullah and Asmara (2006) explains that in the agency relationship between legislators as principal and executive agency, the Executive as having access to more information would be opportunistic to maximize its budget, while the legislator as a principal who has an interest to propose programs that support the interests of konstituenya not have sufficient information whether these programs have been correctly implemented by the executive. Assuming that individuals act to maximize their own self-interest, then with its asymmetric information will drive the executive (agent) to hide some information that no legislator (principal). In the asymmetry conditions, executives may affect the accounting numbers presented in the financial statements. Some of the cases occurred in the country and abroad which has involved the auditors, which the auditor as an independent party has made a mistake that resulted in the form of manipulation of the audit results as well as the leakage of funds.

Jensen and Meckling (1976) states that the agency problem can arise between the agent and the principal. The agency problem arises because of the tendency of one party for the selfish and the emergence of conflicts when multiple interests meet in a joint activity. The existence of a conflict of interest between principal and agent because of their different objectives encourage asymmetry information. Principal agent must monitor the work so that organizational goals can be achieved efficiently and to enhance public accountability.

ERP is software that is the solution for large scale businesses. ERP system consists of modules for software support, such as marketing and sales, field service, product design and development, production and inventory control, procurement, distribution, facilities management of industrial, process design and development, manufacturing, quality, human resources, finance and accounting, and information services.

ERP systems using relational database technology to integrate the various elements of an organization's information systems. ERP concept is an attempt to control all of the company's resources through an integrated data handling with an integrated information system. With the availability of a complete and fully integrated, the management company can undertake the planning of all resources quickly and accurately. In addition to improving the company's performance is also very influential on decision making for managers. ERP information system covers all parts of the integrated company, both structurally and functionally.

Information is data that is processed into a form more useful to the recipient that illustrates an events and real unity and can be used for decision making. While accounting is a medium of communication in the business world, where the role of accounting applicable in each company is different. This depends on the type of business entity, large or small companies, complicated or not the company's financial problems. Accounting can work well if supported by an adequate system.

Another understanding regarding the accounting of Charles T. Horngren (2003: 2) is "A system that follows the activities of business process information in the form of reports and
communicate them to decision makers." Thus it can be concluded that the accounting is a process of recording a company's business activity documented in a form that is useful for pihan report among the stakeholders for decision-making. Understanding - understanding of accounting information and it can be concluded that the accounting information is processed data derived from the identification, measurement and correlation of information that can be used for decision making.

The quality of accounting information is the accounting information is presented accurately and on time have reliable quality free from misleading notion that can provide benefits to users of the information. Good quality information can drive the company's success in the future. This is because the quality of information that can either lead to success, while the poor quality of information that can lead to business failure (Bovee, 2004). Accounting information must be presented as completely as desired and needed.

**HYPOTHESIS DEVELOPMENT**

According to O'Leary (2000), ERP systems are designed to support business process improvement, thus enhancing the quality of information, decision-making and performance of the company. In concept, the realization is facilitated by the ERP system for the integrated nature of the company's information through the database. Implementation of ERP technology in the organization is generally seen as something that is very difficult and complex, causing the top management as well as users are reluctant to implement it. The interesting phenomenon when ERP implementations in the organization, that success is determined by a user key which is supported by top management and user.

One of the advantages of implementing ERP systems is the ability to improve the internal management decision making. These conditions should allow companies that implement ERP systems to perform better performance than the company's non-ERP (Hunton et al., 2003). Implementation of the ERP system also enhances the ability of management to manage financial information for external users. One of the factors of ERP implementation by the agency problem, but the ERP system is able to improve the accuracy of management and to reduce the information asymmetry between managers and investors.

Based on these descriptions the hypothesis that was built in the study were:

H1: The ERP system positively affects the quality of accounting information.

![Figure 1 – The Research Model](image_url)

**METHODS OF RESEARCH**

*Population and Sample.* The data used in this study are primary data. In this study the primary data used in the form of ERP user perceptions and opinions related to the ERP system affecting the quality of accounting information. Data obtained by distributing questionnaires to one manufacturing company in Surabaya using the ERP system.

Methods of data collection in this research is to use a questionnaire to be filled out by the respondent. The questionnaire will be received by the respondent questions to obtain information researchers will provide directly to ensure the questionnaire to the respondent. Instructions on filling in the questionnaire made simple and clear as possible to facilitate charging answers. Respondents would give a rating scale of 1 to 5 on the questions in the questionnaire.

Analysis of the data used in this research is descriptive analysis and statistical analysis were processed using SPSS 20.0 software. Santoso (2012: 29) explains that descriptive statistics are used to describe the data that has been obtained for each of the variables without the intention of making conclusions that are generally applicable. Statistical analysis
used in this study was Validity, reliability test, Normality Test, F Test, Test R Square, and t test.

Variables, Operational Definitions, and Technical Analysis. Independent variables used in this study is the Enterprise Resource Planning (ERP). Enterprise Resource Planning (ERP) is an information system that optimizes the distribution of corporate resources and help businesses to integrate all of its resources more quickly and effectively to improve operational performance and increase competitiveness (Hsiao, 2007). But the success of the ERP system itself is not easy to achieve, because the ERP software itself is not something that when mounted / implementation can be run successfully by itself. ERP system was measured using questions that describe some of the items the user experience in viewing the information on the implementation of the ERP system. Respondents were asked to rate among the five possible answers ranging from strongly agree to strongly disagree with 5-point Likert scale.

The dependent variable used in this research is the quality of accounting information. The quality of accounting information is information that has been able to reliably reveal the information is complete and accurate material covering important dimensions that are relevant and essential events (Azhar 2008), The quality of accounting information is measured using several items of questions that describe the quality of accounting information generated ERP system. Respondents asked to give the value of the five possible answers ranging from strongly agree to strongly disagree with 5-point Likert scale, where 1 point is given for the selection of a meaningful answer the most low-quality accounting information and 5 points for possible answers highest-quality accounting information.

RESULTS AND DISCUSSION

Validity Test. Validitas test to determine the validity of the questionnaire instrument used in data collection. Based on the results of SPSS is known that the value of all items of questions showed a significant level of 0.05 < meaning all valid questions.

Reliability Test. A questionnaire said to be reliable or reliable if someone answers on the statement is consistent over time (Cooper and Schindler, 2006). Based on the reliability test in the table below shows that all variables have Cronbach’s Alpha values above 0.70. These results can be said that the items on each variable is said to be reliable, so the items on each variable can be used as a measuring tool.

Table 1 – Reliability Test

| Variables                  | Cronbach’s Alpha | Ket   |
|----------------------------|------------------|-------|
| ERP systems                | 0.899            | reliable |
| Accounting Information Quality | 0.846            | reliable |

Source: Data processed, 2017.

Normality Test. According to the table below can be seen the value of the Kolmogorov-Smirnov test to test the effect of the implementation of the ERP system on the quality of accounting information of 0.793 greater than the coefficient significance (0.05). This indicates that the normally distributed data and the regression model is feasible used to predict the dependent variable is the quality of the information based on the input of independent variables namely the implementation of the ERP system.

Table 2 – Normality Test

|                  | Residual unstandardized |
|------------------|-------------------------|
| N                | 44                      |
| Kolmogorov-Smirnov Z | 0.650                  |
| Asymp. Sig (2-tailed) | .793                   |

Source: Data processed, 2017.
Test F. Based on the above table it is known that F count equal to 4.958 with a significant coefficient of less than 0.05, the regression model can be said to fit. Thereby indicating that the regression model can be used to predict the ERP system implementation affect the quality of accounting information.

Table 3 – Test F

| ANOVAa | Model | df | F  | Sig. |
|--------|-------|----|----|------|
|        | Regression | 1  | 4.958 | 0.031 |
|        | Residual   |    |      |      |
|        | Total      |    |      |      |

Dependent Variable: Accounting Information Quality.
Predictors: (Constant), ERP system implementation.

Table 4 – R2 test

| Model | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|-----------------------------|
| 1     | 0.084             | 3.403                       |

Source: Data processed, 2017.

Based on the above regression model known coefficient of determination (R2) of 0.084. This means that the regression model obtained is able to explain the influence of the independent variables on the dependent variable of 8.4% and the remaining 91.6% of dependent variables is affected by other independent variables were not observed in this study.

T-test. The t-test is used to look at the influence of the independent variable on the dependent variable. T-test analysis processing results can be seen in the following table:

Table 5 – t-test

| Model | Sig. |
|-------|------|
| 1 (constant) | 0.007 |
| Total_ERP   | 0.031 |

Source: Data processed, 2017.

Here are the results of multiple linear regression analysis using SPSS 20 to test the effect of independent variables ERP on the quality of accounting information.

Table 6 – Multiple Linear Regression

| Coefficients* | unstandardized coefficients | standardized coefficients | t    | Sig. |
|---------------|-----------------------------|---------------------------|------|------|
| Model         | B               | Std. Error | beta  |      |      |
| 1 (constant)  | 18.290          | 6.474       | 2.825 | 0.007|
| Total_ERP     | .208            | 0.093       | 0.325 | 2.227| 0.031|

Dependent Variable: Accounting Information Quality.

Based on t test results can be concluded that the ERP system implementation significant positive effect on the quality of accounting information. Variable ERP system implementation is significant, it is seen from the significance of 0.031 less than 0.05. Thus H1 is accepted, the implementation of ERP systems significant positive effect on the quality of accounting information.

The results showed that ERP implementation significant positive effect on the quality of accounting information. It can be seen from the results of the regression test the significance level value calculated at 0.031 less than the 0.05 confidence level.
The quality of a reliable accounting information is needed by stakeholders in the company. One of the advantages of implementing ERP systems is the ability to improve the internal management decision making. These conditions should allow companies that implement ERP systems to perform better performance than the company’s non-ERP.

By using ERP enables managers and investors to get the company’s accounting information in realtime. With the availability of a complete and fully integrated, the management company can undertake the planning of all resources quickly and accurately. In addition to improving the company’s performance is also very influential on decision making for managers. ERP information system covers all parts of the integrated company, both structurally and functionally.

CONCLUSION

Information technology used in information systems is growing rapidly, ERP (enterprise resource planning) is an application of enterprise-based information systems, which allows integration of data contained in the entire existing units within the organization, thus enabling business organizations to make decisions accurately and quickly. From the discussion that has been done, it can be concluded that the ERP system and the business world can not be separated, because the ERP system will support and assist operational activities in order to improve efficiency and effective, which ultimately provide benefits for the company.

Based on the analysis of results and discussion, then the conclusion of this study is the implementation of ERP in one of the manufacturing companies have a significant positive effect on the quality of accounting information. From the implementation of the ERP system produces quality accounting information that has reliability that can help management and investors in decision making.

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THE IMPACT OF CHILD EMPOWERMENT THROUGH ISLAMIC CHARACTER EDUCATION BY THE SMART BETING COMMUNITY IN REGIONS WITH STIGMA AND DISCRIMINATION, WEST BORNEO

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ABSTRACT
Kampung Beting is one of several floating villages that still exist in West Kalimantan. This first village in Pontianak city was originally the central of government, economic, and central of the spread of Islam in Pontianak. In the past, the people were also well-known for their politeness and hospitality. However, along with the times, the change that was happening was heading towards a negative direction instead. Nowadays, Kampung Beting is stigmatized and discriminated against due to the proliferation of crimes in this region, especially on drug abuse. In areas with stigma and discrimination, children are the most vulnerable party to being victims. As a form of concern for this region, especially for children, a group of people built a community called the Smart Beting Community. The Smart Beting Community strives to abolish stigma, eliminate discrimination, and to prevent the regeneration of drug abuse among the people of Kampung Beting by empowering children through Islamic character education which is packaged in The Beting Loves Quran’s Program and Beting Learning. Therefore, it is necessary to know how the characteristics of children and the impact of child empowerment by this Smart Beting Community. This study is used a descriptive qualitative method. Data collection is done by direct observation, interview, and document review. The results of this study are the child empowerment through Islamic character education carried out by the Smart Beting Community was having a positive impact. Suggestions conveyed are the need for additional volunteers who served as instructors and makes clear and firm rules for the improvement and development of the community. In addition, there is also a need for more intensive cooperation with parents, the government and the society.

KEY WORDS
Kampung Beting, smart community, child empowerment, stigma, discrimination.
in Kampung Betin actually led to negative things. Now Kampung Betin is better known for its inherent stigma. The stigma then caused discrimination toward the people, for example they are complicated in getting jobs and loans, and children also receive bullying if they were known to originate from this region. Some parents will also disagree with their child's love relationship if it is known that the child's partner is from Kampung Betin. The stigma attached to the Betin region was caused by the increase of criminal acts such as gambling, thieves, and the most dominant is drug abuse in this area.

Responding to the problems in Kampung Betin, a community was born initiated by 11 women and named the Smart Betin Community. The Smart Betin Community focused on empowering the children in Kampung Betin. They saw children as victims of bad environments and parents who care less about education and relationship of their children. Because the majority of the population in Betin Village is Muslim, this community then used the Islamic education approach, namely by reading, memorizing, understanding and characterizing the values or teachings contained in the Koran (the holy Quran), hadiths and stories of prophets and apostles. In addition, children were also taught to read daily prayers as a media to give values of Islamic character on them. Similar research in this location has never been found. In other words, the theme of this research was only first adopted in the Kampung Betin area. It was because so far the development carried out by various parties in Kampung Betin was more on physical development, such as widening the road or the park. While the Smart Betin Community made efforts to develop human resources. Through Islamic character education that was used as a bridge to achieve community goals.

There are two opinions about character formation or development. The first opinion is that character is an inherited trait that cannot or is difficult to change (educated). The second opinion is that character can be changed through education [1]. Whereas Maksudin [2] argues that characters are not born based on descent or occur suddenly, but through a long process, namely character education. In terms of the essence of Islamic education/religion, in fact, educational activities are indeed an inseparable part of the life of Islamic religion, both in families, communities, centers of worship, and schools. Religious education is an important part of national education with related to aspects of attitudes, moral values, and moral values [3]. Islamic education facilitates humans to learn and practice actualizing all the potential they have, both physical and non-physical, whose profile has been described by Allah in the Koran as a figure of ulil albab, as a complete Muslim man, namely man who has faith, knowledge and productive works of good deeds based on the guidance of Islamic teachings [4]. Character education is a solution to solve moral problems. This great effort must be realized in big actions. As a result, all teachers in all regions of Indonesia must pay great attention that teaching not only makes students smart in terms of intelligence (brain) but also in terms of behavior [5]. Islamic education is formed to prepare students to recognize, understand, appreciate and then have trust, taqwa (fear of Allah) and have good character in practicing Islamic teachings based on the Koran and Hadith. This process is done through guidance, teaching, training and experience. We are required to respect followers of other religions and live as a united community [6]. The concept of Islamic education is based on the Koran and Hadith, and prioritizes human development as a whole, which includes the spiritual, intellectual, emotional, and physical aspects. Islamic education includes the process of forming individual characters, namely by giving guidance and guidance so that they wholeheartedly believe that there is a God whose command must be obeyed by worshiping and having good character [7].

Empowering children through Islamic character education is the solution to overcome the problems that exist in children in Kampung Betin. There were indications that children were under threat of bad environmental influences and they were as the most vulnerable group to become victims. They also appeared to be used to saying dirty and rude, acting impolite, with or without consciously bullying people around, smoking, playing gambling, and other behaviors that indicate that the child has a bad character. The children should be in a conducive environment, security, comfort and all their rights are maintained. The children in this village also have self potential that can be developed as in various sports, especially swimming. and other fields. Therefore, an empowerment approach is needed for children in
this region to explore and improve the quality of science, faith and charity for the creation of the quranic generation.

The theoretical implication of this research is that the empowerment of children through Islamic character education only gives a positive impact on children. They become better after participating in the child empowerment program carried out by the smart betting community. Children who used to say dirty and rude now they become softer and polite in speaking. Those who were previously naughty, now become more obedient and respectful to teachers or older. Islamic religious education which given to them has been proven to prevent children from behaving badly. Then the practical implication is that this research is expected to be a material for evaluating the smart betting community to improve the quality and quantity of teachers or volunteers. In addition, it can also be used as a reference for other researchers who want to do further research or similar to this theme.

METHODS OF RESEARCH

In this study, the researchers used qualitative methods with descriptive type. We also used purposive with a case study of efforts to establish islamic character in children in Kampung Beting, Bugis Dalam Sub-District, East Pontianak District, West Kalimantan Province. Here the researchers observed and participated in interactions with people related to the problem to be studied. Then, we tried to capture a variety of qualitative information, provided, and described situations and the events found during the study took place accurately also carefully according to the facts obtained in the field, without containing prejudices about the object under study. The data which were collected in this study were data that obtained in the field from informants or sources of data and observations which done by the researchers themselves. The data collection technique which used was direct observation, semi-structured interview, and document review. Then, in in this study, the researchers also used triangulation technique which was used to test the data validity by checking the data to the same source with different techniques. It means that the data which were obtained by interviews, then checked with the results of observation and documentation. The data analysis techniques which used by researchers were referring to Miles & Huberman in Salim 2006 [8] who suggested that the components in data analysis, namely reduction, presentation of data, and drawing conclusions.

RESULTS AND DISCUSSION

The Smart Beting Community is one of several communities born in the Kampung Beting area. Smart Beting was born because of its concerns about the stigma of Kampung Beting and the discrimination received by the people. Since 2016 until now, this community has consistently shown concern for its environment by directly involved in development, especially in improving the quality of human resources. Kampung Beting children and youth are priority targets of its program. Beting Pintar also tried to make behavioral changes and the formation of the Islamic character of the Kampung Beting community to become better and more moral through education. The Smart Beting Community seeks to increase public awareness of the importance of education, and explore the potential and capabilities of the people of Kampung Beting by focusing on Islamic Education which is taught through the Koran teaching and learning activities. The Qur'an and the sunnah of the Prophet Muhammad are the main guidelines used in running community programs. Those two guidelines were considered containing all the values needed to build the Islamic character of society, especially in children and adolescents.

The Characteristics of the Participants of Programs. Based on the results of a study toward two work programs of smart Beting community, namely Beting loves Qur'an program and Beting learning program, it was known that the number of students was fluctuating. But in February until May 2018, it was discovered that there were 46 children registered as participants of those programs. Although it was still fluctuate, the number was as the highest number of registered and active students. They were 4-16 years old students.
Table 1 – The Number of Students in Beting Loves Qur’an Program and Beting Learning Program Based on Their Gender and Age in February-May of 2018

| Gender | Age  | Total   | Percentage |
|--------|------|---------|------------|
| Male   | 4-5  | 2 people| 4          |
|        | 6-7  | 4 people| 9          |
|        | 8-9  | 2 people| 4          |
|        | 10-11| 4 people| 9          |
|        | 12-13| -       | -          |
|        | 14-15| -       | -          |
|        | 16-17| -       | -          |
| Female | 4-5  | 6 people| 13         |
|        | 6-7  | 10 people| 22         |
|        | 8-9  | 10 people| 22         |
|        | 10-11| 5 people| 11         |
|        | 12-13| 2 people| 4          |
|        | 14-15| -       | -          |
|        | 16-17| 1 person| 2          |
| Total  |      | 46 people| 100        |

Based on table 1 above, it can be seen that participants in the child empowerment program through Islamic character education which done by smart betting community are mostly female. When observations were made, it is also known that girls had a higher level of adherence to the rules of the teacher than boys. Girls were more easily guided to be in order/regulated nicely and neat. They were also more enthusiastic in joining the program.

The Impact of the Program on Children. The aim of continuing the children empowerment program of smart betting community in the Beting village was to make a change in their behavior. Behavior changes from non-Islamic one to the formation of Islamic characters. Both behavioral changes in children, parents, and for the community itself. This community seeks to build Islamic values that are considered containing all aspects needed by humans to achieve the goodness of life through some of their work programs. The Beting loves Quran program and Beting learning program were recognized as the most beneficial and had positive impacts for various parties involved in it. Especially for children, parents and the community itself. After 2 years of the existence of this community, there was a change in the students' characteristics which became more Islamic. This is recognized by the statement of the head of the smart betting below:

"What is seen so far is that children have seen behavioral changes. If the children who were new, I do not dare to say that there have been changes, it is caused that the students are within 6 months to be active. In the past, yes there were but they were good children from the beginning, they were not naughty" (Nurbaiti, October 2017).

Furthermore, there were also participants of programming who did not show any impact on their activities. They were children who only followed the learning process in smart betting for a few weeks. In addition, for the new students who took the program less than one year, most of them were children with a good basic attitude. The result of authors' observation related to the effects of the existence of the smart betting community with its superior programs, betting loves Quran and betting learning program also in line with the information conveyed by its secretary below:

"Yes, Allah, first of all you can see, if we visited them, they liked always keeping their hands up, Sis, I begged you, Sis, your sandals had been tidied up, sis. They were naughty, they were not vaccinated. Oh, Allah Sis, when I first arrived, they would read the holy Quran if we asked them to read it. They came with the smell of sweat, their body was dirty. The smell of their sweat until I vomited. So, the volunteers who taught them did like what I did (covering their nose with veil), even though I didn't say that we understood the problem because we had experienced it. Sis, it's really nauseous. Those who were like that, they were orphan or did not have parents. Once loosing sandals, spit out, were punched at the beginning. Anyway, bad feeling was enough to meet with all of them. Everything was like
that. The people who could not stand with the situation, they would feel bad. They cried. Now, there is more than 50 percent of children who have changed more easily. Then if you meet them, they say hello, they don't say rude/ dirty or impolite anymore. Yes, the rest was those who failed or they did not succeed, the children who spend only few meetings for its programs and after that they would not appear anymore, they went away” (Desi, July 2018).

From the statement of its Chairperson and the secretary of smart beting community about the changes in the behavior of children and parents above, and harmonized with observations made during the research process, the authors found that the impact of the program could be seen based on 2 things. The first was based on the length of time/ duration the child became a participant in the betting loves Quran program and memorizing. Then the second was based on the basic attitude of the child herself/ himself from the beginning of being a participant in the program. From the two ways in measuring the impact, the results showed that there were significant behavioral changes in the participants of programming who had participated since the beginning, namely starting in April 2016 until now. Children who really changed were children who at the beginning of the study looked and had non-Islamic characteristics, such as coming to recite the holy Qur’an using tight and sexy clothes, easy to say dirty and rude, arbitrarily in treating their friends and older people by hitting, throwing things, spitting on and raising the tone of their voice. Whereas in old students who were from the beginning were kind, there were no noticeable changes. The impact that could be seen only in terms of appearance and the ability of children in reciting and memorizing the holy Quran.

A participant in the betting loves Quran programs and learning program recognizes the benefits or positive effects felt on her after she joined them. She said that: "It's very helpful, Sis. Let the children be clever in their reciting Quran, so they knew Islamic law, know the Islamic order or rule, so that they did not speak rudely. There was a change if we did it, before we recited the holy Quran, we did not wear veil, once we did it, directly we wore veil. Even at school, we wear veil now” (Diva, May 2018).

This 12-year-old student explained that from those programs that she had participated for 2 years brought change into her. She who previously did not wear a veil, now she wears it. Even the hijab is not only used when studying or participating in community programs, but also at school. In addition, those programs also have an impact on other friends, namely a child becomes more intelligent in reciting the holy Quran and slowly no longer says rude, especially when the teaching and learning activities are ongoing. It is understandable that this student likes to recite the Quran here because of good teachers and they get many friends. The same thing was also said by Salwa. 5 year old students who claimed to be happy to be able to recite Qur’an and studied together with the smart beting community. "I really liked to be here, lots of friends, there’re some competition, I have ever won a prize for book and pen. I have already knows some Islamic prayers, like prayers for eating, before sleeping, and entering restroom” (Salwa, May 2018).

Salwa started to recite the Quran in the smart beting community since she was 4 years old. Usually she was accompanied by his aunt or mother. Here parents could also accompany and directly monitor their child’s activities. When she was interviewed, not only Salwa, her mother also gave an explanation of the changes in her child after joining those two programs. She explained as follows:

“There were some effects that appeared on her. For example, every day in the environment she played with friends who she used to used rude words, impolite words but here they were taught by teacher. There were changes step by step. It’s good enough. There was a bit change. The main thing she did not say impolite words even she did not use scorn words anymore. Thank God for it” (Azizah, May 2018).

It is clear that after studying with the smart betting community, there is a positive change in children, namely in their words and manners. Children who used to be used to verbal abuse, being disrespectful towards others and those who are older, and rude and even tend to be insolent, now look civilized, orderly and calm. These changes do not only occur because of the role model of its management team and community members of smart betting community but also because of the influence of the environment and friends who
interact with children who change. According to him, besides because of many friends, it is also because in the smart betting community, there are many activities that support children's interests and talents, also supported by facilities such as reading books and games, so that teaching and learning activities do not feel monotonous and boring. Sometimes the activities of reciting or memorizing are diverted outside the classroom. For example on the banks of the Kapuas river, in the yard of the smart betting secretariat or in another place that feels comfortable for children.

Behavioral changes in participants in its programs that was quite clear in the second year of the establishment of this community. the changes that occur now becomes the allure owned by smart betting community. This community thus gained additional value which was used to invite more parents, especially those in the surrounding villages and surrounding areas to register their children as participants in its programs. In addition, smart betting also take advantage of the positive impact that has been felt by parents and their students to expand the cooperation to various parties.

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IMPACT OF TRANSFORMATIONAL LEADERSHIP AND COMPENSATION ON INNOVATION BEHAVIOR, WITH EXTRINSIC MOTIVATION AS MEDIATOR

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ABSTRACT
An increasingly complex and competitive organization environment, demanding every organization to be more responsive in order to survive and grow. Extrinsic motivation, compensation, transformational leadership is some of factors which is can give impact to the employee innovation behavior. The object for this study is PT. Idefta Nusantara. Population and samples in this study is the employees of PT. Idefta Nusantara. The data used in this research is the data collected from the questionnaire method, which has provided a list of questions by researchers. The data will be processed by path analysis method, using the validity and reliability test and classic assumption test with SPSS version 22. The results of this study show the hypothesis can prove that the role of transformational leadership and compensation can give effect to innovation behavior through extrinsic motivation as intervening variable; it can be measured by comparing the value of transformational leadership (X1) and compensation (X2) on innovation behavior (Y) directly with the value of its total influence. If the total influence value of each exogenous variable is bigger than its direct influence on the endogenous variable, then the extrinsic motivation can be identified as the intervening variable. Based on the analysis, direct influence of transformational leadership (X1) is 0.231 and compensation (X2) is 0.158. While total influence of transformational leadership (X1) to innovation behavior (Y) is 0.112 + 0.330 = 0.442 and influence of compensation (X2) to innovation behavior (Y) is 0.590 + 0.330 = 0.920. From the calculation result showed that the total influence of transformational leadership (X1) and compensation (X2) variables is bigger than the direct influence to the two exogenous variables on innovation behavior (Y). These results indicated that extrinsic motivation (X3) can be an intervening variable between innovation behavior (Y) with transformational leadership (X1) and compensation (X2). This paper would help leaders in this sector to develop a better understanding.

KEY WORDS
Work environment, transformational leadership, compensation, extrinsic motivation, innovation behavior.

The process of aligning organizational changes with individual changes is not easy. To support such organizational changes, individual changes are required. Leaders are role models in the organization, so change must start from the top level of the leader itself. There are many challenges and obstacles faced by organizational leaders and in leading an organization, the role of leadership will become increasingly difficult (Zaccaro SJ and Klimoski, 2001). Compensation provides an important role for every employee. Compensation can be defined in various ways. In English, "compensation" is defined as something that balances or redeems something else. However, if we look at its origins if words are in different languages, we can get a sense of meaning richness, which combines rights, returns, and rewards (Atul, Matt & George, 2002). In Chinese, the traditional character for the word "compensation" is based on symbols for wood and water, providing compensation needs in life (Milkovich & Newman, 2008). In the literature management is
often used to explain the extrinsic motivation that has something to do with work. The limits of extrinsic motivation can be interpreted as the process by which behavior is driven and directed. The limitation can be interpreted that extrinsic motivation can also be interpreted as a motive situation, so understanding of work motivation is something that raises the spirit or the drive of work.

Normatively, many factors influence innovation behavior, such as motivation, leadership, knowledge management, job satisfaction, competence, compensation and other factors. In this study is limited or emphasized on the relationship of transformational leadership to compensation and innovation behavior with extrinsic motivation as intervening variable, with identification: transformational leadership that must be improved; compensation that must be improved; extrinsic motivation that must be improved; innovation behavior still not maximized.

Empirically, the innovation behavior of individual employees is strongly influenced by many factors, both internal and external factors. The factors of transformational leadership (X1), compensation (X2) and innovation behavior (Y) and extrinsic motivation (X3) are the main variables that become the focus of discussion. Selection of variables in this study as well as the limitations of research. The authors formulate the problems and objectives as follows:

- How does the direct influence of transformational leadership and compensation together on the innovation behavior of employees in the company?
- How does the influence of transformational leadership partially on the innovation behavior of employees in the company?
- How does the effect of compensation partially on the innovation behavior of employees in the company?
- How does the direct influence of transformational leadership and compensation together on employee motivation in the company?
- How does the effect of extrinsic motivation on innovation behavior in company?
- How does indirect influence of transformational leadership and compensation together on innovation behavior in company?
- How does extrinsic motivation play a role as an intervening variable in relation to the influence of transformational leadership and compensation collectively on the innovation behavior of employees in the company?

The benefits as follows:

- Results are expected to provide input to the leadership within the organization in performing appropriate strategies to improve innovation behavior and compensation, especially by using transformational leadership and create employee motivation appropriately;
- Results are expected to complement subsequent research materials in order to increase the knowledge so that it is useful for science, in Human Resource Management, as well as create and or receive the working environment condition as well as possible.

**LITERATURE REVIEW**

*Transformational Leadership.* According to (Geva and Torpey, 2008), leadership is now an important part of science and research, because leadership science is very useful for individuals, jobs and organizations. With the benefits of accessing information today and being used with competitive things, leadership science is fundamental and very important in organizations (Storey, John. 2010).In organizational life, leadership is an important thing, leadership is important to make people in organization behave according to the desired by the leader to achieve organizational goals. A leader is an individual who inspires, motivates, and directs others to achieve their common goals (Yukl GA.1989). According to (Northouse, 2006), transformational leadership is a process that is transforming individual through standards, ethics, and long-term goals. It also includes checking followers' motives, satisfying
needs, and caring for them. Transformational leadership requires a kind of extraordinary influence that encourages followers to do beyond what is expected of them.

Compensation. (As’ad, 1998), (Dhermawan, Sudibya, Utama, 2012), states that job satisfaction is the result of various work-related attitudes and special factors such as compensation, wages, supervision, job stability, work tranquility, fair work, social relationships in work, and the treatment of superiors. According to (Deluca, 1993) and (Rajkumar, 1996), compensation is defines as pay, reward, remuneration, or salary and wage management. These terms are often used interchangeably in organization. In an organization perspective, compensation is often defines as an important human resource management function where it emphasizes planning, organizing, and controlling various types of pay systems. For example, direct and indirect payments, monetary and non-monetary rewards and cash and non-cash payments, those compensation is used for rewarding employees who perform in their work or service (Noe, Hollenbeck, Gerhart & Wright, 2004). In this research, compensation refers to all forms of financial returns and tangible services employees receive as part of employment relationship. It can be seen as a measure of justice. Normally, it is the major source of employees' financial security (Milkovich & Newman, 2008).

Innovation Behavior. There has been an increasing evidence regarding the role of innovation in the success of the organizations (Martins & Terblanche, 2003; Patterson et al., 2009). Innovation is viewed as the main determinant of organizational success and competitiveness (Calantone et al, 2002; Neely & Hii, 1998; Palangkaraya et al, 2010; Salaman & Storey, 2002; Thornhill, 2006). Recently organizations are paying attention to their human resources to produce innovative behaviors and consequently innovations (Carmeli et al., 2006; Patterson et al., 2009; Scott and Bruce, 1994) because innovations drive from the ideas that come from the individuals in the workplace (Neely & Hii, 1998; Patterson et al., 2009). Firms depend on their employees with creative ideas and effort (Bharadwaj & Menon, 2000; Sousa & Coelho, 2011). Individual innovation behavior in the workplace is considered to be the main pillars of high-performing organizations (Carmeli et al., 2006). Finding out motivators and enablers of individual innovation behavior would be a great contribution toward understanding individual innovation (Carmeli ET al.2006; De Jong, 2006; Wu et al., 2011) and organizational innovation and success (Scott & Bruce, 1994; Xerri & Brunetto, 2011).

Extrinsic Motivation. Motivation are the factors that exist within a person that move and direct his or her behavior to meet certain goals. Referring to Abraham H. Maslow's theory of hierarchy, needs that motivation is influenced by the impulse of physiological needs, the impulse of safety needs, the impulse of social needs, the encouragement of appreciation needs, and the impulse of self-actualization needs, while the psychological ability consists of the potential ability (IQ) and the ability of reality (knowledge and skill). (Vroom, V. H. 1964) believe that the work done by employee’s aims at a performance that is capable of generating an award. The award may take the form of negative or positive. A positive appreciation will make employees more motivated. The distinction between extrinsic and
intrinsic was first made popular by Herzberg in 1959, when he divided work rewards into the two different categories (Kanungo & Hartwick, 1987). When a person is extrinsically motivated the person is driven to perform his or her task because it leads to some separate consequence (Deci & Ryan, 2008). For a person to be extrinsically motivated then an instrumentality between an activity and some separate reward is required. This means that motivation is driven not from the activity itself, but rather from the extrinsic consequences to which the activity leads (Gagne & Deci, 2005). In essence “the clearest examples of extrinsically motivated behaviours are those performed to obtain a tangible reward or to avoid a punishment” (Deci & Ryan, 2008). The tangible rewards here can either be of a financial, material or a social character, all having in common that they originate from the environment.

METHODS OF RESEARCH

Observation object in this research is PT. Idefta Nusantara. The time of the observation was conducted in November until December 2017.

The research variable is an attribute or the properties or values of a person, object, or activity that has certain variations set by the researcher to study and draw conclusions. In this study, the variables used are Transformational leadership (X1) and Compensation (X2) as independent variables, while Extrinsic motivation (X3) as intervening variable and Innovation behavior (Y) as dependent variable.

Population is defined as the overall subject of the study (Arikunto, 1998). In this study the population is all staff and employees of PT. Idefta Nusantara. In this study the number of samples of 300 employees of PT. Idefta Nusantara. The determination of the number of samples is based on the opinion of (Roscoe, 1975) in (Sekaran, 2000) which states that firstly, sample sizes greater than 30 and less than 500 in most studies are representative. Secondly, if the sample is divided into subsamples, then each category is required at least 30 samples. This method used random sampling that is a group of subjects randomly based on certain characteristics or traits that are considered to have a close relationship with the characteristics of the population. (Polit and Hunger, 1999) define the population as the sum of all subjects appropriate to the research objectives, which comprise the entire group of people interested in the researcher himself, and others whose results can be generalized. According to (Polit & Hungler, 1999) sampling is the whole population selection process being simpler and can be said to represent the entire population is sampling.

Method of Collecting Data. Data collection using survey method through the distribution of questionnaires to respondents. (Syamsul Hadi, 2006) states that the questionnaire is a set of questions that have been prepared and written before by the researcher, to ask answers to the respondents, the questionnaire is not always a question, but also can be a statement. The process of distributing and collecting questionnaires is done directly in the place of the object of research. The reason for using survey is that researchers can save time, effort, and cost. The use of such methods is also expected to reveal the perceptions of the actual respondents.

Questionnaire is a number of written questions that are used to obtain information from respondents in the sense of reports about his personality or things he knows (Arikunto, 1998). Questionnaires were distributed along with letters of application for questionnaires and explanations of matters relating to the research. The scale used in the questionnaire is the Likert scale with multilevel answers in five categories ranging from highly agreed assessments to highly disagreeable ratings. The Likert scale is used as a basis for making inquiries in this questionnaire, by means of each subject of the study will face statements, and also asked to answer questions that researchers have prepared in the questionnaire. (Umar in Erza, 2012).

Interviews are a means of re-checking or proof of information, data or information that has not been obtained or has been obtained previously. The interview process begins with an introduction that is openly and honestly the researcher introduces himself and explains the purpose of the interview. Researchers put more emphasis on objectivity and honesty that
is realized by explaining the purpose of research to informants. Preparations that researchers must do before meeting informants is to provide the completeness of the interview and plan what activities need to be done.

**Data Instruments Test (Validity and Reliability Test).** The accuracy of the use of an instrument must be measured by a validity test (Uys & Basson, 1991). Validity can be categorized into two types, namely as external and internal validity. In the effort of data processing, the author divides this stage into several parts. First, the indicators / parameters of each variable that are the focus of the discussion are derived in the form of questions / statements in the questionnaire bundle. Questionnaires are compiled using closed models. That is, every question / statement has been provided each answer in the form of Likert scale. Second, the questionnaires distributed and filled by the respondents will be sorted, where each answer will be scored. The value of each score is displayed in matrix form and the total value of the scoring metric will be used as the basis for subsequent data processing that is in the form of statistical computation calculation. Third, the calculation of statistical computation using SPSS software ver 22, where the results of this calculation that will be used as the basis of further analysis.

Validity is defined as a measure of truth or falsity of data obtained through the use of research instruments. These are classified as internal and external validity of measuring tools, (Burns & Grove, 2001). Validity is a test to determine the accuracy of the status of the measuring instrument in performing the measuring function.

\[
ry = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}
\]

Where: \( r_{xy} \) = coefficient of validity of the items observed; \( X \) = scores of observed subjects; \( Y \) = total score of the observed subjects; \( \sum X \) = total score in \( X \) distribution; \( \sum Y \) = total score in \( Y \) distribution; \( \sum X^2 \) = sum of squares in distribution scores \( X \); \( \sum Y^2 \) = sum of squares in distribution scores \( Y \); \( N \) = number of respondents.

The categorization of the validity of the instrument which refers to the classification of validity set forth by (Guilford, 1956) is as follows: 0.80 – 1.00 = very high; 0.60 – 0.80 = high; 0.40 – 0.60 = moderate; 0.20 – 0.40 = low; 0.00 – 0.20 = very low (not valid).

The degree of consistency in which the instrument measures an attribute is called Reliability (Polit & Hungler, 1999). The fewer variations of the instrument produced in repeated attribute measurement, the higher the reliability. Invalid instrument can not be relied upon (Polit & Hungler, 1999). In this research the reliability test is done with the alpha cronbach formula as follows:

\[
r_n = \left( \frac{k}{k-1} \right) \left( \frac{\sum \sigma_b^2}{\sum \sigma_1^2} \right)
\]

Where: \( r_n \) = Reliability; \( k \) = Number of questions; \( \sigma_b^2 \) = Number of grain variants; \( \sigma_1^2 \) = Total Variant.

The use of Alpha-Cronbach technique will show that an instrument can be said to be reliable if it has a reliability coefficient or alpha of 0.6 or more. Criteria of a research instrument is said to be reliable by using this technique, when the coefficient of reliability is > 0.6 or compared with \( r \) table. It is reliable, if the value of Alpha Cronbach coefficient is greater than \( r \) table. Categorization which refers to the classification of validity set forth by (Guilford, 1956) is as follows: 0.80 < \( r_n \) <= 1.00 = very high; 0.60 < \( r_n \) <= 0.80 = high; 0.40 < \( r_n \) <= 0.60 = moderate; 0.20 < \( r_n \) <= 0.40 = low; 1.00 <= \( r_n \) <= 0.20 = very low (not reliable).

Based on the analytical tools, classical assumptions as follow:
Data Normality Test. To determine whether in independent variables, dependent variables, and regression models have a normal distribution or not it is very necessary to do this test. By looking at the spread of data then we can detect the normality data regression model. If data distribution forms or follows a diagonal line, then the data distribution regression model can be said to be normal (Ghozali, 2006).

Multicollinearity Test. To test whether the regression model finds correlation between independent variables or not, it is necessary to do multicollinearity test. If there is no correlation between independent variables then the regression model is very good. Variance inflation factor can be used to find out whether there is multicollinearity or can’t be seen from the tolerance. The cut off value used to indicate the presence of multicollinearity is a tolerance value < 0.10 or equal to VIF > 10 (Ghozali, 2006).

Heteroscedasticity Test. To determine whether in the regression model there is an inequality of variance from one residual observation to another it is necessary to test the heteroscedasticity. If the observed residual variant from one observation remains fixed or homoscedasticity then it is a good regression model. To know heteroscedasticity can be seen from the plot graph, heteroscedasticity can be seen or occurs when the points form a regular pattern: widened, wavy, and narrow. Otherwise heteroscedasticity does not occur when the points spread and do not show a specific pattern (Ghozali, 2006).

Path Analysis. According to (Gujarati, 2003) Path Analysis is an analysis to know the contribution of each variable of variable x to y using regression with variable in standardize. Before testing whether there is any influence, each path is tested for significance. first. If there is a path that is not significant then applied trimming theory that is by eliminating the path that is not significant. Then from the results of the new structure is recalculated each path coefficient.

Based on these results can be known the amount of direct and indirect influence and total influence; then in this research can be formed structural equation as follows:

![Path Analysis Model](image)

Figure 2 – Path Analysis Model

The empirical causal relationship framework between the selection system and the training program on quality of work through competence can be made through the following structural equations:

Structural equations 1: \( Y_1 = PX1X3 + PX2X3 + e1; \)
Structural equations 2: \( Y_2 = PX1Y + PX2Y + PX3Y + e2. \)

Where: \( Y \) = Innovation Behavior; \( X1 \) = Transformational Leadership; \( X2 \) = Compensation; \( X3 \) = Extrinsic Motivation; \( P \) = Coefficient; \( e1 \) = Error of term 1; \( e2 \) = Error of term 2.

Hypothesis test. In testing the proposed hypothesis, the researcher uses simultaneous significance test (statistical test f) and test individual parameters (t test statistic). To see if all independent variables in the model have a simultaneous effect on the dependent variable, it is necessary to do a statistical test f. While to see how far the influence of one independent
variable individually in explaining the dependent variable, it is necessary to do t test statistic (Ghozali, 2005). Tests were performed using a 0.05. The following criteria to show acceptance or rejection of the hypothesis:

- If significant value > 0.05 means hypothesis is rejected (regression coefficient is not significant). This means that there has no significant effect between independent variable and the dependent variable;
- If significant value ≤ 0.05 means hypothesis is accepted (significant regression coefficient). This means that the dependent variable gets a significant influence from the independent variable.

The data in this research will be processed by using SPSS version 22. The hypothesis in this research is influenced by the value of significance of the appropriate variable coefficient after the test. Conclusion The hypothesis is based on t-test and f-test to test the independent variable's significance to the dependent variable.

RESULTS OF STUDY

Validity and Reliability Test. Validity test using factor analysis techniques, to test whether the grains of questions or indicators used to confirm a factor or a construct or variable. While the reliability test aims to find out how far a measuring instrument can be trusted. Reliability test can be done by using coefficient cronbach's alpha with critical limit for reliable questionnaire value is 0.60 (Soegihartono, 2012).

Table 1 – Reliability Test

| Reliability Statistics | X_1 | X_2 | X_3 | Y |
|------------------------|-----|-----|-----|---|
| Cronbach’s Alpha       | 0.900 | 0.843 | 0.796 | 0.883 |

Source: Primary Data.

Normality Test. To see the normalits test is by looking at significant numbers of Kolmogorov-Smirnov test by Kolmogorov-Smirnov test on residual data.

Table 2 – Normality Test

| Normal Parameters | Transformational Leadership | Compensation | Extrinsic Motivation |
|-------------------|-----------------------------|--------------|---------------------|
| Mean              | 30.23                       | 20.07        | 11.27               |
| Std. Deviation    | 3.501                       | 2.016        | 1.660               |
| Absolute          | .293                        | .188         | .137                |
| Positive          | .129                        | .188         | .111                |
| Negative          | -.293                       | -.187        | -.137               |
| Kolmogorov-Smirnov Z | 1.605                  | 1.032        | .752                |
| Asymp. Sig. (2-tailed) | .012                  | .238         | .623                |

a. Test distribution is Normal.
b. Calculated from data.

All variables are normally distributed based on normality test, from Kolmogorov-Smirnov test significance of 0.012 and 0.238 and 0.623 is greater than α = 0.01.

Multicollinearity Test. Multicollinearity testing using Variance Inflation Factor (VIF). The VIP value for each independent variable used in the research model is 1.245; 1.329; 1.076. This states that the model does not exist or does not occur multicollinearity between independent variables because the value of VIF obtained is smaller than 10. The results can see at table below:

Table 3 – Multicollinearity Test

| Model                  | Collinearity Statistics |
|------------------------|-------------------------|
|                        | Tolerance | VIF   |
| Transformational Leadership | .803       | 1.245 |
| Compensation           | .753       | 1.329 |
| Extrinsic Motivation   | .929       | 1.076 |

a. Dependent Variable: Innovation Behavior
**Heteroscedasticity Test.** To determine whether or not heteroscedasticity in this study used Park Gleyser test by correlating the residual absolute value with each independent variable. If the result of probability value has significance value > its alpha value (0.05) then model does not experience heteroscedasticity (Adji Djojo, 2012).

| Model       | Unstandardized Coefficients | Standardized Coefficients | t    | Sig. |
|-------------|-----------------------------|---------------------------|------|------|
| (Constant)  | -7.994E-016                 | 6.882                     | .000 | 1.00 |
| Transformational Leadership | .000                        | .150                      | .000 | 1.00 |
| Compensation | .000                        | .269                      | .000 | 1.00 |
| Extrinsic Motivation | .000                        | .294                      | .000 | 1.00 |

a. Dependent Variable: abresid

If the value of probability or significance is less than 0.05 then the model can be said to have no symptoms of heteroscedasticity. The table above shows that the probability or significance level of each variable is 1.000 so it can be ascertained that the model does not experience symptoms of heteroscedasticity, in other words the correlation of each variable with its residual value yields a value greater than its alpha.

**Hypothesis Test:**

**Line Coefficient Calculation in Sub-Structures 1 and 2.** The results of the analysis that has been done, then the results obtained from the analysis of Path Analysis can be presented in the following table as follows:

| Equation | Coefficient | Variable Significance Test (t-Statistic) | Model Test (F-statistic) | R²   |
|----------|-------------|------------------------------------------|--------------------------|------|
| Sub-Structures I | P X₁X₁ = 0.112  P X₁X₂ = 0.180 | 0.504 0.004 | 0.003 0.413 |
| Sub-Structures II | P YX₁ = 0.231  P YX₂ = 0.158  P YX₃ = 0.330 | 0.000 0.001 0.002 | 0.001 0.548 |

*Source: Primary Data.*

**Substructure I:**
- The value of R² is 0.413. This value means that the influence of transformational leadership, compensation toward extrinsic motivation together is 41.3%, while the rest equal to 58.7% influenced by other factor. In other words, the extrinsic motivation variables that can be explained by using transformational leadership variables and compensation are 41.3%, while the effect of 58.7% is caused by other variables outside the research model.
- Test of significance or testing by using F test, calculation results with a significance level of 0.05 (5%) by comparing the level of significance (sig). Based on calculation of significance number that is equal to 0.003 < 0.05 then H1 accepted and Ho is rejected. This means that transformational leadership and compensation with extrinsic motivation have a linear and significant relationship. Conclusion is that transformational leadership style and compensation together influence extrinsic motivation.
- The value of significance (sig) for each variable as follows; transformational leadership is 0.504 and compensation is 0.004. If the value is compared with α = 0.05 then only the significance value (sig) has a smaller value compared to 0.05. In other words, partially from the two exogenous variables of transformational leadership and compensation is only compensation that has a significant relationship to extrinsic motivation while the
- can be seen the value of the beta variable. Where the beta value of transformational leadership variables have no significant relationship to extrinsic motivation.
For the magnitude of the influence of each exogenous variable on the extrinsic motivation transformational leadership variables and compensation is 0.112 and 0.590. Thus it can be seen the results of substructure I is as follows: \( X_3 = 0.112 + 0.590 + 0.587 \).

**Substructure II:**
- The value of R² is 0.548. This value means that the influence of transformational leadership, compensation and extrinsic motivation to innovation behavior together is 54.8%, while the rest equal to 45.2% influenced by other factor. In other words, the innovation behavior variables that can be explained by using transformational leadership variables, compensation and extrinsic motivation are 54.8%, while the effect of 45.2% is caused by other variables outside the research model.
- Test of significance or testing by using F test, calculation results with a significance level of 0.05 (5%) by comparing the level of significance (sig). Based on the calculation of significance that is 0.001 < 0.05 then H₁ accepted and H₀ is rejected. This means that there is significant relationship between transformational leadership, compensation, innovation behavior, and extrinsic motivation. The conclusion is that transformational leadership, compensation and extrinsic motivation together influence innovation behavior.
- The value of significance (sig) for each variable as follows: transformational leadership is 0.000, compensation is 0.001 and extrinsic motivation is 0.002. If the value is compared with \( \alpha = 0.05 \) then the three significance values (sig) of each exogenous variable have a smaller value compared to 0.05. In other words, partially from the three exogenous variables of transformational leadership, compensation and extrinsic motivation have a linear and significant relationship to innovation behavior.
- For the magnitude of influence of each exogenous variable on the innovation behavior can be seen the value of the beta variable. Where the beta value of transformational leadership variables, compensation and extrinsic motivation is 0.231, 0.158 and 0.330. Thus it can be seen the results of substructure II is as follows: \( Y = 0.231 + 0.158 + 0.330 + 0.452 \).

In the correlation analysis with SPSS presented:

### Table 6 – Intergroup Correlation Results

| Correlations | Transformational Leadership | Compensation | Extrinsic Motivation |
|--------------|-----------------------------|--------------|----------------------|
| Transformational Leadership | Pearson Correlation | .442* | .534 |
|                      | Sig. (2-tailed) | .014 | .035 |
|                      | N | 300 | 300 | 300 |
| Compensation | Pearson Correlation | .442* | 1 | .263 |
|                      | Sig. (2-tailed) | .014 | .016 |
|                      | N | 300 | 300 | 300 |
| Extrinsic Motivation | Pearson Correlation | .534 | .263 | 1 |
|                      | Sig. (2-tailed) | .035 | .016 |
|                      | N | 300 | 300 | 300 |

*Correlation is significant at the 0.05 level (2-tailed).*

Transformational leadership variables and compensation correlations is 0.442. Where the correlation of two variables is significant because the value of significance (sig) obtained by 0.014 < compared with 0.05. Transformational leadership and compensation correlations on each extrinsic motivation has a value of 0.534 and 0.263. This suggests that the correlation between the transformational leadership and extrinsic motivation is relatively strong and in the direction of the nature of the significant relationship. This is stated by obtaining a significance value (sig) of 0.035 < compared to 0.05. Meanwhile, between
compensation and extrinsic motivation is quite strong and in the direction of the nature of significant relationship. This is stated by obtaining a sig value of 0.016 < compared to 0.05.

**Result of Influence Calculation.** In order to provide an explanation related to the variables studied then the results of influence are made and described in the following table:

| Variable | Direct Effect | Indirect Effect | Total Effect |
|----------|---------------|----------------|--------------|
| X1 → X2 | 0.112         | (0.112 x 0.330) | 0.0370        |
| X2 → X3 | 0.590         | (0.590 x 0.330) | 0.1947        |
| X1 → Y  | 0.231         |                | 0.231         |
| X2 → Y  | 0.158         |                | 0.158         |
| X3 → Y  | 0.330         |                | 0.330         |

The above calculation results if transformed into image form can be presented as the following chart:

The hypothesis that alleged that extrinsic motivation (X3) acts as an intervening variable in the influence of transformational leadership factor and compensation on innovation behavior can be proven by comparing the value of transformational leadership factor (X1) and compensation (X2) on innovation behavior (Y) directly with the value of its total influence. If the total influence value of each exogenous variable is greater than its direct influence on the endogenous variable, then the extrinsic motivation can be identified as the intervening variable. Based on the analysis, the value of direct influence of transformational leadership factor (X1) is 0.231 and compensation (X2) is 0.158. While total influence of transformational leadership (X1) to innovation behavior (Y) is 0.112 + 0.330 = 0.442 and influence of compensation (X2) to innovation behavior (Y) is 0.590 + 0.330 = 0.920. From the calculation result showed that the influence of the total of transformational leadership (X1) and compensation (X2) variables is greater than the direct influence to the two exogenous variables on innovation behavior (Y). These results indicate that extrinsic motivation can play an intervening variable.

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ABSTRACT
Koi herpesvirus (KHV) not only can infect cyprinidae, but also infect other freshwater fishes. It causes KHV to spread widely throughout the world. Infection of KHV in fish has several symptoms and one of them is increased HSP70 expression. The purpose of this study is to detect HSP70 expression in KHV-infected tilapia. The study were carried out by qualitatively examining expression of HSP70 in the gill of tilapia, both normal tilapia and KHV-infected tilapia, and by detecting the tissue damage caused by KHV by means of histopathology. The results of this study show that HSP70 was detected in fish that were infected by KHV, while in control fish, HSP70 was not detected. This result indicates that tilapia infected by KHV experience an increase in HSP70 expression. Damage to the gill of tilapia is also one of the responses to KHV antigens in the host cell. Thus, this study presumed that KHV infection in tilapia is influenced by the expression of HSP70.

KEY WORDS
HSP70, KHV, Oreochromis niloticus, fish, infection.
response to stress is in the form of Heat Shock Protein 70 (HSP70) induction. HSP70 is a group of stress proteins expressed by host cells to protect physiological tissue against environmental changes or antigens infection and maintain its condition (Yanuhar et al. 2015).

Moreover, increased expression of HSP70 is thought to be an indicator or biomarker for several viral infections, including herpesvirus (HSV1) (Santoro, 1994; Diaz-Latoud et al. 1997), denovovirus type 5 (Mayer, 2005), vaccinia virus (Jindal & Young, 1992), Whispovirus (white spot syndrome virus) (Lin et al. 2011). This study aims to determine the expression of HSP70 within the gills of KHV-infected tilapia, which is presumed to be the major portal of entry for KHV into the body of fish in its relation to cellular function of HSP70.

MATERIALS AND METHODS OF RESEARCH

Tilapia samples used in this study were obtained from traditional fish farming in Abar-Abir Village, Bungah District, Gresik Regency, East Java, Indonesia. Samples of 20-to-30 tilapias were taken randomly in alive condition from each fishpond. For control fish, 10 tilapias of 7-10 cm were used. Furthermore, those tilapias were brought to the Fish Quarantine Laboratory for dissection under sterile condition. The dissected organs were taken for DNA extraction and histopathology examination.

Polymerase Chain Reaction (PCR) Testing:

DNA Extraction. 25 mg of gills were crushed and homogenized in 180 µl of AL buffer using a microtube and digested in 20 µl Proteinase K at 56°C for 10 minutes. Ethanol (100%) of 200 µl was added and vortexed. The supernatant was transferred to a new tube, 500 µl buffer AW1 was added to it, and centrifuged at 8000 rpm for 1 minute. The supernatant was taken and 500 µl buffer AW2 was added, then centrifuged at 14000 rpm for 3 minutes. The supernatant was taken, added by 200 µl of buffer AE, and incubated for 1 minute at room temperature, then centrifuged at 8000 rpm for 1 minute. The resulting DNA was dissolved in 50 µl buffer AE and stored at -20°C for the next process.

DNA Amplification. Amplification of KHV DNA used specified primary TK gene (Bercovier et al. 2005). Forward (F: 5' - GTA TTA CCT GTA CTA GC-3') and Reverse (R: 5'-CAC CCA GTA GAT TAT GC -3'). Meanwhile, to qualitatively detect HSP70 expression, specified primary HSP70 was used, which would produce amplification products at 457 bp (Wang et al. 2007), Forward (F: 5'-ATC CTG ATT ACC GAA GAC GGA-3') and Reverse (R: 5'-CAT CTG-CTC AAT CTG-3 GCG'). For KHV DNA amplification, the temperature setting was: 1 cycle at 95 °C for 5 minutes; 35 cycles at 95°C for 30 seconds, 52°C for 30 seconds, and 72°C for 1 minute; and 1 cycle at 72°C for 10 minutes. Meanwhile, HSP70 amplification used temperature setting: 1 cycle at 42°C for 60 minutes; 1 cycle at 98°C for 5 minutes; 1 cycle at 94°C for 2 minutes; 30 cycles at 94°C for 30 seconds, 58°C for 30 seconds and 72°C for 30 seconds; 1 cycle at 72°C for 10 minutes.

Histopathological Examination. Gills were fixed using 10% Neutral Buffer Formalin (NBF) for 24 hours. Samples were then processed by embedding and cut with a thickness of 10 µm. After that, the sections were stained with hematoxylin and eosin (HE) and observed using a microscope at 400x magnification.

RESULTS OF STUDY

KHV Detection. Detection of KHV was carried out on KHV-infected tilapia and control fish. The test results on gills showed positive KHV signal, amplified at 409 bp. The results of detection on tilapia using primary TK gene can be seen in Figure 1.

Meanwhile, based on the results shown in figure 2, it can be seen that two KHV-infected tilapias from different ponds showed a positive signal of HSP70, whereas control tilapia did not show the existence of HSP70. This result indicates that tilapia infected by KHV showed an increased HSP70 expression.

According to histopathological examination, damage to tissue within gills of KHV-infected tilapia (Figure 3) showed that gills experienced fusion of secondary lamellae as a result of hyperplasia, in which the fusion of secondary lamellae in the gills is a characteristic
symptom of KHV in fish. Furthermore, there were inclusion body and necrosis within the gills. The presence of inclusion body is also a symptom of KHV infection in tissue within gill.

Figure 1 – PCR test result on tilapia using primary TK gene. (M) DNA ladder 100-bp; (1) Positive Control KHV 409 bp; (2) Tilapia of Fishpond 1; (3) Tilapia of Fishpond 2; (4) Tilapia control; (M) DNA ladder 100-bp

Figure 2 – HSP70 Detection on Tilapia. (M) 100-bp DNA Ladder; (1) Tilapia of Fishpond 1; (2) Tilapia of Fishpond 2; (3) Tilapia Control

Figure 3 – Histopathology of gills with H&E staining. (1) Hyperplasia; (2) Inter-lamellar fusion; (3) Necrosis; (4) Inclusion body. Bar = 1 µm

**DISCUSSION OF RESULTS**

The result from observation using molecular assay on the gills of tilapia infected by KHV indicates that there was an increase of HSP70 expression in those organs. This increase was a response to KHV antigens. HSP70 will be induced in response to a stressor that affects the body of the fish. This response indicates that the KHV-infected tilapias
respond to HSP70 induction, while HSP70 itself is secreted due to Heat Shock Response (HSR). Heat Shock Response (HSR) is a defense response mechanism from cells that experience environmental stress physically (temperature, ultraviolet radiation), biologically (viral, bacterial, nutritional deficiency), or chemically (waste contamination), which will cause a stress response in the form of HSR. If there is severe or lethal stress, it will result in damage or even cell death, whereas if sublethal stress occurs, it will trigger HSR.

Heat shock proteins (HSP) in cells or tissues, under normal conditions, function on protein folding, regulating protein transport, involving in regulating cell cycles and immunity, and also function as molecular chaperones. In abnormal conditions or in conditions triggering stress, HSP will prevent errors in protein folding and prevent protein aggregation that cannot be repaired. In addition, HSP70 can also function in modulating the immune system of the host by acting as pro-inflammatory and anti-inflammatory. Regarding tissue damage caused by KHV infection, namely, necrosis, formation of inclusion body, hyperplasia and inter-lamellar fusion, the formation of the inclusion body is a sign that viral infection has occurred in the tissue. The inclusion body formed indicates the involvement of HSP70 that acts to aggregate proteins that are not unfolded or misfolded and then to precipitate those proteins in an inclusion body.

In addition, one of the defense responses of fish that experience exposure to pathogens or chemical agents is usually by sticking to secondary lamellae so that fusion is formed. Sano et al. (2004) have explained that fusion occurs because of hyperplasia in the branchial epithelium, which is followed by cell necrosis that is quite clearly noticeable. KHV-infected fish have gill abnormalities, such as hypertrophy, hyperplasia, and fusion on secondary lamellae. Damage to the gill lamella microscopically showed secondary lamellar thickening growth due to increased number and migration of malphigian cells in the primary lamella, causing respiratory area to narrow (Hedrick et al. 2000). Damage to the tissue of tilapia is a response to KHV antigen in the host cell. This response caused HSP of tilapia induced by a stressor to increase, mainly due to exposure or KHV infection. Yanuhar et al. (2015) have stated that cellular responses to an antigen can cause tissue damage.

The function of HSP is to protect tissue from damage caused by viral infections, increased temperature, and inflammation. Inflammation is a complex biological response in blood vessel tissue against dangerous stimuli, one of which is due to pathogenic infection. Other studies have stated that many HSP70 are induced during viral infection. Besides facilitating viral pathogenesis, increased expression of HSP70 induced by cellular stress also relieves stress caused by viral infection (Sullivan & Pipas, 2001; Neckers & Tatu, 2008; Roberts et al. 2010). The HSP70 causes KHV-infected tilapia to not experience mortality and be able to survive even though there is tissue damage within the gills.

**CONCLUSION**

The results of this study indicate that HSP70 expression was detected in the gills of KHV-infected tilapia, in which the gills are believed to be the main portal entry for KHV into the body of the fish. The presence of HSP70 also presumably intervenes in modulating a series of response mechanisms to prevent damage to the tissue caused by KHV infection.

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APPLICATION OF K, Ca, and Mg ON PEEL THICKNESS AND FRUIT CRACKING INCIDENCE OF CITRUS

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ABSTRACT
Citrus cv. Terigas (Citrus reticulata) genetically has a fragile fruit peel that occurs from young up to mature stage which causing farmers to suffer detrimental lost in production. The addition of K, Mg, and Ca can reduce the number of damaged fruit. This research was conducted at the Tlekgun Experimental Field, Indonesian Citrus and Subtropical Fruits Research Institute (ICSFRI) in January - October 2017, using 4-year-old Mandarin cv. Terigas and Tangerine cv. Pontianak citrus plants. The aims of this study was to evaluate the effect of K, Ca and Mg fertilizers on nutrient uptake in plants, fruit development, and the percentage of cracking fruit on Mandarin cv. Terigas (Citrus reticulata) and Tangerine cv. Pontianak (C. reticulata Blanco.). The experiment was carried out in a Nested Design. The 1st factor was the application of K, Ca and Mg through foliar spray, consisted of P1 (Control/without fertilizing), P2 (recommended fertilization), P3 (P2 + 3 g l⁻¹ K + 1 g l⁻¹ Ca + 1 g l⁻¹ Mg), P4 (P2 + 6 g l⁻¹ K + 2 g l⁻¹ Ca + 2 g l⁻¹ Mg), and P5 (P2 + 6 g l⁻¹ KNO₃). The second one was the variety. Mandarin cv. Terigas and Tangerine cv. Pontianak as a control. The treatment was repeated 3 times with a unit treatment of 5 plants. Observations were made on macro nutrient uptake on leaves and fruit skin, development of fruit size, number of cracking fruit/plant, size of fruit diameter, and thickness of fruit peel. The results showed that the cracking incidence of Terigas fruits was caused by the thinning of the fruit peels, where the thinner the peel of the fruit, the more fruit would be cracked (Y = 20.501 to 9, 9702 X, R² = 67.5%), while the thickness of the skin was not influenced by nutrients absorbed in the fruit peel. Treatment P2 to P5 was able to suppress fruit cracking on Terigas Mandarin between 22 - 56.1% at age of 22 weeks and 14.9 - 42.6% at age of 26 weeks after flowering. Moreover, P3 can prevent 50% of cracking fruit/plant less than the control (P1). All treatments did not significantly affect on the thickness of peel fruit of Tangerine cv. Pontianak. This activity has an impact on increasing the quantity and quality production of Mandarin cv. Terigas.

KEY WORDS
Fruit cracking, Mandarin cv. Terigas, Tangerine cv. Pontianak, fruit peel.
colour (albedo) and an external layer/flavedo (exocarp). The pressure that occurs due to the rapid expansion of the pulp when the fruit develops will trigger the formation of cracks in the flavedo and it is the beginning of the breaking of fruit on the stilar, which is the weakest part of the skin of the citrus fruit. In addition, nutritional imbalance, low Ca and K and high P, conditions of hot and humid air, irregular irrigation, and plants with heavy fruit can also trigger fruit cracking incidence in some citrus varieties starting at the time the they begin to develop. Fruit in young trees tends to be more susceptible to cracking than older plants (Goodwin, 2008; Cronje et al., 2013).

Studies showed that field flooding during the dry season followed by fertilizer application was able to improve the quality of Terigas Mandarin fruit, including reduced broken fruit, increased fruit diameter (grade), reduced acid levels (%), and increased fruit sugar levels (Purba et al., 2016). The application of organic fertilizer + inorganic fertilizers + mulch + (Ca and B) accompanied by flooding ditches can reduce the number of broken fruit to 19.4%. This is in accordance with the opinion of Goodwin (2008), that damaged fruit can be reduced by maintaining optimal environmental conditions for plant growth, including watering and adequate nutritional intake. The condition of deficiency of K elements will cause thin fruit skin which will encourage breakage on the fruit. The use of mulch and compost will also maintain the degree of moisture in the soil, while the application of slow release fertilizers will be enough to help provide food intake evenly.

According to El-Tanany et al. (2011), spraying K, Ca and Mg on leaves once to three times also increases the number of fruit set per branch and the number of fruit/plant. In addition, this treatment also increases the speed of fruit development, significantly reducing the broken fruit and increasing the quality of WNO sweet orange fruits. Also added by El-Rahman et al. (2012), that K applied in the form of 4-6 % KNO₃ significantly increases skin thickness thereby reducing the incidence of cracking, increases fruit size, and production, while the combination of KNO₃ 5% + 2.4 D 20 ppm sprayed 60 days after flower blooms will increase fruit size (Boman & Hebb, 1998; Rattanpal et al., 2005; Vijay et al., 2016). Improvement of irrigation management, mulching, manure application, as well as other inorganic additions can reduce fruit cracking on lemon (Sandhu & Bal, 2013).

Fruit cracking can also be reduced by other growth regulator applications. The addition of Zn and NAA during the enlargement phase of Shatangju citrus will encourage an increase in IAA, GA₃ and tryptophan at the beginning of the development of the skin, thus inducing cell growth and division, reducing the variation in skin hardness and reduce cracking on the albedo which will reduce broken fruit (Li et al., 2016).

The justification of the research is that in less optimal conditions of citrus plants, the fruits of Terigas Mandarin tend to crack. On the other hand, the addition of K, Mg, and Ca by foliar spray on them would be reducing the number of damaged fruit. The aim of this study was to evaluate the effect of foliar spray of K, Ca and Mg fertilizer on nutrient uptake in plants, fruit development, fruit peel thickness, and percentage of fruit cracking in Terigas Mandarin (Citrus reticulata) with Pontianak Tangerine (C. reticulata Blanco) as a control variety.

**MATERIALS AND METHODS OF RESEARCH**

The study was conducted at KP. Tleking, ICSFRI from January to October 2017, using 4-year-old Terigas Mandarin and Pontianak Tangerine plants as a control.

| Block I | Block II | Block III |
|---------|---------|-----------|
| P 5 V 1 | P 3 V 1 | P 4 V 1 |
| P 3 V 1 | P 2 V 1 | P 1 V 1 |
| P 2 V 1 | P 1 V 1 | P 3 V 1 |
| P 4 V 1 | P 5 V 1 | P 2 V 1 |
| P 1 V 1 | P 4 V 1 | P 5 V 1 |

| Block I | Block II | Block III |
|---------|---------|-----------|
| P 1 V 2 | P 2 V 2 | P 5 V 2 |
| P 5 V 2 | P 3 V 2 | P 1 V 2 |
| P 3 V 2 | P 4 V 2 | P 2 V 2 |
| P 2 V 2 | P 1 V 2 | P 4 V 2 |
| P 4 V 2 | P 5 V 2 | P 3 V 2 |

*Note: V1 = Terigas Mandarin; V2 = Pontianak Tangerine*

**Figure 1 – The layout of the treatments**
Experiment was done by adding minerals K, Ca and Mg by spraying on the leaves of plants. The treatment consisted of 2 factors, first factor was the treatment of spraying (P) and II was citrus varieties (V), with each treatment consisted of 5 plants and repeated 3 times (Figure 1). Experiments were carried out in a nested design, with models: \[ Y_{ijk} = \mu + B_k + R(B) + A_j + AB_{ij} + \varepsilon_{ijk}. \]

The spray dosage treatment was as follows:
- P: Control, plants were not fertilized;
- P2: Fertilization treatment according to field standards (1 kg/plant of Ponska and ZA);
- P3: P2 + Fertilizer K 3 gram/l + Fertilizer Ca 1 gram/l + Fertilizer Mg 1 gram/l (sprayed in January, February and March 2017);
- P4: P2 + Fertilizer K 6 gram/l + Fertilizer Ca 2 gram/l + Fertilizer Mg 2 gram/l (sprayed in January, February and March 2017);
- P5: P2 + KNO₃ 6 gram/l (sprayed in January, February and March 2017).

Observation Parameters:
- The content of macro nutrient on leaves and fruit peels. Analysis on macro nutrient uptake was carried out at the Soil Analysis Laboratory, Faculty of Agriculture, Univ. Brawijaya Malang, East Java-Indonesia. Analysis of N, P, K, Ca, and Mg leaves was carried out 20 days after the final treatment;
- Fruit size. Observation on development of fruit size was carried out by measuring the diameter of the fruit in 20 samples/plant. Fruit samples were determined on branches in the direction of 4 winds, 5 fruits/branches. Fruit development measurement is the increase in the average size of the diameter (fruit diameter in \( n + 1 \) month – fruit diameter in \( n \) month);
- Number of fruit cracking that is observed every month;
- At harvest time: fruit diameter, fruit skin thickness (transversal fruit cut, thickness);
- Statistical analysis. Data collected was analysed by ANOVA using Minitab 16 program.

RESULTS AND DISCUSSION

Nutrients content in the leaves and fruit peels of Terigas Mandarin and Pontianak Tangerine. In general, the average content of N, P, and Ca absorbed in the leaf level was higher than in the peel of its fruit, whereas K and Mg were not significantly different (Table 1).

Table 1 – T test for percentage of nutrient uptake in fruit peel and citrus leaves of Terigas Mandarin and Pontianak Tangerine

| Organ   | % absorption of nutrients | N   | P    | K    | Ca    | Mg    |
|---------|--------------------------|-----|------|------|-------|-------|
| Leaf    |                          |     |      |      |       |       |
|         |                          | 2.979 | 0.175 | 0.823 | 3.014 | 0.279 |
| Peel    |                          | 1.273 | 0.092 | 0.778 | 0.882 | 0.300 |
| T Test  | (5%)                     | **  | **   | ns   | **    | ns    |

Note: ns = not significant different based on T test 5%.

Coetzee (2007a) mentioned that the total N content on citrus cv. Valencia Late Orange (VLO) ranged from 700 - 900 g/plant, with a composition of 40% and 20% for leaves and fruit respectively; 30 % in buds, branches, stems; and the rest (10%) in the roots. Moreover, Dalal et al. (2017) reported that the maximum N content in leaves reached 2.51% after foliar application of 3% KNO₃, and this level was not significantly different compared to other treatments. Higher nutrient levels in the leaves are assumed to be due to differences in the way they are absorbed. According to Coetzee (2007a), Ca is absorbed by plants and then translocated passively to leaves and fruit through water flow. The process of transpiration of young leaves is much higher than that of young fruit, so that the flow of water and Ca that are carried will be even higher. The accumulated calcium cannot move to other tissues. This causes the Ca levels to be high after the application of foliar spray. The remaining calcium that is not used by plants will be deposited in the form of calcium oxalate which is not soluble
in water. Calcium absorbed in the fruit skin will affect the quality of the fruit (Blanco et al., 2010).

Potassium is mobile and generally enters the plant due to absorption by the roots and transported to meristem tissue. Apart from absorption, nutrient content in a tissue is also caused due to relocation, i.e. from old to young tissue (Coetzee, 2007b). Due to higher mobility and always on the move, the remaining content in the leaf tissue is not higher than before after spraying application. However, the addition of K application will still have an impact on increasing the size of fruit diameter compared to the control treatment, although its absorption efficiency in the field was only ± 25% (Coetzee, 2007c). On the skin of Terigas Mandarin and Pontianak Tangerine fruits, the average nutrient content of N and Ca is relatively higher than the others. Singh et al. (2015) reported that Ca in grapefruit (cv Star Ruby) was higher than other macro nutrients, as the fruits get older. Therefore each of these minerals is absorbed in different patterns (Figure 2).

Based on the correlation analysis, there was no relationship between nutrient uptake in the leaves and the fruit peel (Table 2). The same trends was also reported by Coetzee's (2007a, b), where differences in the levels of mineral nutrients in the leaves and in the skin of the fruit are caused by the way they are absorbed or relocated.

| Nutrients in the leaves / skin | N   | P   | K   | Ca  | Mg  | Equation       | R²   |
|-------------------------------|-----|-----|-----|-----|-----|----------------|------|
| N                             | ns  | -   | -   | -   | -   | Y = 2.723 - 0.174 X | 0.001|
| P                             | -   | ns  | -   | -   | -   | Y = 0.137 + 0.439 X | 0.024|
| K                             | -   | -   | ns  | -   | -   | Y = 0.570 + 0.249 X | 0.035|
| Ca                            | -   | -   | -   | ns  | -   | Y = 3.14 - 1.21 X | 0.06 |
| Mg                            | -   | -   | -   | -   | ns  | Y = 3.55 - 3.28 X | 0.342|

Note: ns = not significant at correlation test 5%.

Effect of varieties and foliar application of K, Ca and Mg on leaf nutrient content. The nutrient levels absorbed in the leaves are influenced by interaction of varieties and spraying dosages (Table 3). The levels of N, P, K, and Mg absorbed in the leaves of P1 (control, not fertilized) were in the optimal range. This shows that the 4-year old plants were in optimal condition. Under these conditions, it is suspected that the addition of fertilizer given by spray on the leaves does not have much effect on the increase of absorbed nutrient levels. The application of mineral nutrients through leaves is thought to be directly used by plants for metabolic processes, plant growth and development. This can be seen in the application of treatment P4 where the nutrient content is raised 100% compared to P3, but the nutrient content absorbed in the leaves tends to decrease.
Table 3 – Percentage of N, P, K, Ca, and Mg uptake in leaves

| Treatment | % N, P, K, Ca, and Mg elements uptake in leaves |
|-----------|-----------------------------------------------|
|           | N     | P     | K     | Ca    | Mg    |
| P1 V1     | 2.39 b| 0.18 abc | 1.11 a| 3.02 ab| 0.20 a|
| P2 V1     | 2.49 ab| 0.20 a | 0.88 abc | 3.17 ab| 0.20 a|
| P3 V1     | 2.66 ab| 0.19 ab | 0.63 abc | 3.08 ab| 0.25 a|
| P4 V1     | 2.53 ab| 0.16 abc | 0.59 abc | 2.87 ab| 0.33 a|
| P5 V1     | 2.38 b| 0.15 bc | 0.39 bc | 3.20 ab| 0.20 a|
| P1 V2     | 2.51 ab| 0.18 abc | 0.87 abc | 3.41 a| 0.26 a|
| P2 V2     | 2.36 b| 0.20 a | 1.07 a | 2.75 b| 0.32 a|
| P3 V2     | 2.86 a| 0.18 abc | 1.04 a | 2.72 b| 0.38 a|
| P4 V2     | 2.28 b| 0.14 c | 0.75 abc | 3.14 ab| 0.32 a|
| P5 V2     | 2.33 b| 0.10 abc | 0.9 abc | 2.74 b| 0.32 a|

P1: Control, plants are not fertilized;
P2: Fertilization treatment according to field standards;
P3: P2 + Fertilizer K 3 g/l + Fertilizer Ca 1 g/l + Fertilizer Mg 1 g/l (sprayed in January, February & March);
P4: P2 + K fertilizer 6 g/l + Fertilizer Ca 2 g/l + Fertilizer Mg 2 g/l (sprayed in January, February & March);
P5: P2 + KNO₃ 6 g/l (sprayed in January, February & March);
V1: Terigas Mandarin; V2: Pontianak Tangerine.

Based on the range of nutrients absorbed in the leaves, all nutrients found in Terigas Mandarin and Pontianak Tangerine were in the optimal level category. The optimal K and P levels in the leaves of citrus plants ranged between 0.10% - 0.16% and 1.0% - 1.5%. The same trend was also reported by Conell (2018) (Table 4).

Table 4 – Optimal nutrient content in citrus leaves

| Nutrients absorbed in the leaves | % nutrient uptake |
|----------------------------------|------------------|
|                                  | Deficiency       | Optimal         |
| N                                | <2.2             | 2.4 - 2.6       |
| P                                | <0.09            | 0.12 - 0.16     |
| K                                | <0.40            | 0.70 - 1.09     |
| Ca                               | <1.6             | 3.0 - 5.5       |
| Mg                               | <0.16            | 0.26 - 0.6      |

Source: Conell, 2018.

Table 5 – The influence of foliar application of K, Ca, Mg on the average of N content in the skin of Terigas Mandarin and Pontianak Tangerine

| Treatment | % N on fruit peels |
|-----------|--------------------|
| P1V1      | 1.400 a            |
| P2V1      | 1.323 b            |
| P3V1      | 1.350 ab           |
| P4V1      | 1.307 b            |
| P5V1      | 1.327 b            |
| P1V2      | 1.140 d            |
| P2V2      | 1.310 b            |
| P3V2      | 1.230 c            |
| P4V2      | 1.040 e            |
| P5V2      | 1.300 b            |

P1: Control, plants are not fertilized;
P2: Fertilization treatment according to field standards;
P3: P2 + Fertilizer K 3 g/l + Fertilizer Ca 1 g/l + Fertilizer Mg 1 g/l (sprayed in January, February & March);
P4: P2 + K fertilizer 6 g/l + Fertilizer Ca 2 g/l + Fertilizer Mg 2 g/l (sprayed in January, February & March);
P5: P2 + KNO₃ 6 g/l (sprayed in January, February & March);
V1: Terigas Mandarin; V2: Pontianak Tangerine.

Effect of varieties and foliar application of K, Ca and Mg on nutrient levels in fruit peels.
The interaction of application and varieties had significantly different on N absorption. The N uptake was highest in the treatment of the combination of P1V1 and P3V1 namely 1.40 and
1.35%, but P3V1 was not significantly different from the 3 other treatment combinations in Terigas Mandarin; whereas in the combination of nutrient addition treatment in Pontianak Tangerine, N uptake in fruit peels tends to be lower than all treatments in Terigas Mandarin (Table 5). This difference in absorption ability may be related to the genetic traits of the plant.

The highest N level on fruit skin was in P1V1 treatment due to better absorption than other treatments. Suspected in P1V1 (control plants, without fertilization) the vegetative growth of the plants was slower than other plants because of lack of nutrient intake relatively. This condition causes the process of N uptake in the fruit skin to be better because there is no competition with the same process in the leaves, which then increases the N levels in the fruit skin.

N and Ca absorption was significantly affected by varieties. In Terigas Mandarin, the N content was high but Ca was lower than Pontianak Tangerine (Figure 3). This character is thought to be due to the genetic nature of each variety (Boaretto et al., 2015) thus affecting the vulnerability of Terigas Mandarin to break compared to other varieties. According to Juan & Jiezhiang (2017), Ca nutrient plays an important role in cell wall metabolism, and can reduce the occurrence of degradation by the hydrolase enzyme which encourages a reduction in the process of fruit skin cracking. The degradation of Ca in fruit peels may also be caused by high N uptake in plants, and causes very active vegetative growth, resulting in high absorption of water and Ca in the leaves. With such conditions, fruit is no longer able to compete with leaves in the absorption process of Ca (Coetze, 2007d).

![Graph](image)

Figure 3 – The percentage of total N (a) and Ca (b) on the skin of the fruit Terigas Mandarin and Pontianak Tangerine

Furthermore, the implementation of P2 up to P5 had a significant effect on the levels of N and Mg absorbed in the fruit skin, where treatment P4 caused the percentage of N and Mg absorbed levels to be lower than others (Figure 4).

![Bar graph](image)

Figure 4 – Average N and Mg uptake on fruit peel by treatment P1-P5

Decreasing absorption of N and Mg through the application of foliar spray (P4) is assumed to be due to the addition of K, Ca, and Mg with a dose that is raised 100%
compared to P3 in plants that are just 4 years old. Thus, it will encourage a higher vegetative growth, resulting in uptake of N, Mg, and more water to the leaf. Meanwhile, uptake in fruit peels will be reduced as occurs in other nutrient minerals (Coetzee, 2007 a).

Effect of varieties and foliar application of K, Ca and Mg on fruit growth. In general the interaction of varieties with the application of K, Ca, Mg through leaves had significantly different. Fruit size increased in the 2nd (March) to the 5th month (June), it was in accordance with the development of its diameter. In the combination of the spraying treatment of K, Ca, and Mg in the Pontianak Tangerine produced a larger size than that of Terigas Mandarin (Table 6).

Table 6 – The influence of foliar application of K, Ca, Mg on the increment fruit diameter from March to June 2017

| Treatment | March | April | May | June | Total increment (Feb to Jun) |
|-----------|-------|-------|-----|------|-----------------------------|
| P1V1      | 4.8 e | 4.9 ab| 4.1 a| 1.9 b| 15.6 e                      |
| P2V1      | 4.8 e | 4.9 ab| 4.0 a| 3.6 a| 17.3 de                     |
| P3V1      | 5.4 e | 5.0 ab| 4.2 a| 3.2 ab| 17.5 de                    |
| P4V1      | 6.1 de| 4.9 ab| 4.8 a| 2.8 ab| 18.6 bcde                    |
| P5V1      | 5.9 de| 5.1 ab| 4.7 a| 2.3 ab| 18.2 cde                    |
| P1V2      | 15.0 a| 4.8 ab| 4.9 a| 2.6 ab| 25.9 a                      |
| P2V2      | 8.1 CD| 7.7 a | 4.4 a| 2.4 ab| 22.5 ab                      |
| P3V2      | 10.5 bc| 5.8 ab| 4.2 a| 2.2 ab| 22.9 ab                      |
| P4V2      | 11.0 b| 4.9 ab| 4.9 a| 2.1 ab| 22.7 abc                     |
| P5V2      | 10.2 bc| 4.0 b | 3.9 a| 2.4 ab| 20.9 bcd                     |

P1: Control, plants are not fertilized;  
P2: Fertilization treatment according to field standards;  
P3: P2 + Fertilizer K 3 g/l + Fertilizer Ca 1 g/l + Fertilizer Mg 1 g/l (sprayed in January, February & March);  
P4: P2 + K fertilizer 6 g/l + Fertilizer Ca 2 g/l + Fertilizer Mg 2 g/l (sprayed in January, February & March);  
P5: P2 + KNO₃ 6 g/l (sprayed in January, February & March);  
V1: Terigas Mandarin; V2: Pontianak Tangerine.

At the beginning of the treatment or observation (in February 2017), the fruit size ranged from 29-34 mm and 24-33 mm for Terigas Mandarin and Pontianak Tangerine, respectively. The increment of fruit diameter on Pontianak Tangerine was higher than that of Terigas Mandarin, so the average fruit diameter at the end of the observation (June) was also higher, 52.5 mm and 48.6 mm respectively (Figure 5).

![Graph showing the development and increment of fruit diameter](image)

Note: PT = Pontianak Tangerine; TM = Terigas Mandarin

Figure 5 – Development and increment of fruit diameter

Difference in the pattern of fruit development is most likely due to genetic factors. This is clearly showed in P1V1 (control, Terigas Mandarin) and P1V2 (control, Pontianak) these were 15.6 and 25.9 mm, respectively. Bermejo & Cano (2012) reported that differences in the nutritional content and physic of citrus fruits were influenced by genetic characteristics,
environment, cultivation methods and use of rootstock. In the development of citrus fruit, there are 3 phases that are much related, namely cell division, cell development and ripening (Verreynne, 2010; Farooq et al., 2011). In the second phase, rapid fruit growth occurs which influenced greatly by environmental factors. In sweet oranges, phase I is achieved in the first 2 months of growth, phase II at 2-6 months, while the next phase until harvest time is above the age of 6 months (Farooq et al., 2011); whereas in lime, from phase II to phase III occurs for 8 weeks (Elsadig & Suleiman, 2013). This also occurs in Terigas Mandarin and Kitamani Tangerine as presented in Figure 5, in which the diameter increases very quickly in March until May 2017 (phase II) and followed by a slowdown in phase III (June 2017).

In Terigas Mandarin, the treatment of P4 and P5 encourages the increase in fruit diameter better than the control (P1). The response is probably due to the addition of P, K, and Ca which is applied through the leaves right at the fruit development phase (Phase II, i.e. January to March). This is in accordance with a study conducted by El-Tanany et al. (2011) and Dalal et al. (2017) on Washington Navel Orange (WNO), Kinnow Mandarin and sweet oranges cv. Jaffa. Number of fruit/branches as well as fruit diameter increased when the nutrient had added through foliar spraying. Application of K through foliar spray causes an increase in photosynthesis, so that protein synthesis, carbohydrate metabolism, and enzyme activation also increase in developing fruits (Hasanuzzaman et al., 2018). Besides influencing photosynthesis, K also causes cell wall formation (Yadav et al., 2014). Nevertheless, according to Morgan et al. (2005), the P element in plants does not correlate with the quality, size and thickness of fruit peels, whereas, K is very influential. Low level of K will significantly inhibit the development of fruit, therefore the plant will produce a smaller size of fruit and thinner fruit skin, encouraging cracks on the skin. Fruit diameter of Pontianak Tangerine (P1) was better than P5 treatment, this suggests that these varieties do not respond to the addition of P, K, and Ca in phase II.

Effect of varieties and foliar application of K, Ca and Mg on total number of cracking fruit. The incidence of fruit cracking only occurs in Terigas Mandarin which started in May (± 22 weeks after the flower blooms) or in phase II fruit development (Figure 6). According to Lin & Chen (2017), the occurrence of cracking in citrus fruit is a gradual process. Initially the fruit will develop normally, where the skin of the fruit develops normally, attaches to the inside, and the oil gland has a normal shape and arrangement. In stage II, there is an increase in the volume of fruit flesh, resulting in progressive changes in the form of fruit. In susceptible varieties, these developments led to the fruit skin become thin and encourage the occurrence of cracks on the skin (Cronje et al. 2013).

![Figure 6 – Normal (a) and cracking fruit of Terigas Mandarin](image)

In Terigas Mandarin, the average number of cracking fruits per plant was not significantly different between controls (P1) and other treatments. However, the treatment P1 tends to produce more damaged fruit, whereas with the addition of nutrient application by foliar spray (P2 to P5) can suppress the level of damage on observed fruit/plant between 22 to 56.1% at the age of 22 weeks, and 14.9 to 42, 6% at the age of 26 weeks after the flowers bloom (May and June) (Table 7).
Table 7 – The influence of foliar application of K, Ca, Mg on the average number of cracking fruit/plant on Terigas Mandarin

| Treatment | May | June | Total |
|-----------|-----|------|-------|
| P1        | 4.1 a | 4.7 a | 8.8 a |
| P2        | 2.8 a | 4.0 a | 6.8 a |
| P3        | 1.8 a | 2.7 a | 4.4 a |
| P4        | 2.3 a | 2.8 a | 5.1 a |
| P5        | 3.2 a | 3.8 a | 6.9 a |

P1: Control, plants are not fertilized;
P2: Fertilization treatment according to field standard;
P3: P2 + Fertilizer K3 g/l + Fertilizer Ca 1 g/l + Fertilizer Mg 1 g/l (sprayed in January, February & March);
P4: P2 + K fertilizer 6 g/l + Fertilizer Ca 2 g/l + Fertilizer Mg 2 g/l (sprayed in January, February & March);
P5: P2 + KNO3 6 g/l (sprayed in January, February & March);
V1: Terigas Mandarin; V2: Pontianak Tangerine.

In treatment P3, the level of total fruit damage can be reduced to 50% compared to the control. This is in line with the results of the study El-Tanany et al. (2011) in WNO citrus plants on which he applied K, Ca, and Mg nutrients once, two, and three times with a concentration of 300 ppm K + 100 ppm Ca + 20 ppm Mg, resulting in a reduction in the percentage of broken fruit compared to controls along with the thickness increase in the skin of the fruit.

Effect of varieties and foliar application of K, Ca and Mg on fruit skin thickness. The treatment of varieties, the application of K, Ca, and Mg through leaves and their combinations did not significantly affect the skin thickness of the intact fruit. The average thickness of Terigas Mandarin and Pontianak Tangerine was 2.24 and 2.27 mm in May and 2.12 and 2.05 mm in June, respectively (Table 8).

Table 8 – The influence of foliar application of K, Ca, Mg on the average skin thickness of Terigas Mandarin and Pontianak Tangerine intact fruit

| Treatment | Fruit skin condition | Skin thickness (mm) |
|-----------|----------------------|---------------------|
|           |                      | May     | June    |
| P1        | Terigas Mandarin (intact) | 2.17 a  | 2.04 a  |
| P2        |                      | 2.34 a  | 2.27 a  |
| P3        |                      | 2.22 a  | 2.06 a  |
| P4        |                      | 2.19 a  | 2.12 a  |
| P5        |                      | 2.29 a  | 2.06 a  |
| Average   |                      | 2.24 a  | 2.11 a  |
| P1        | Pontianak Tangerine | 2.22 a  | 2.00 a  |
| P2        |                      | 2.32 a  | 2.32 a  |
| P3        |                      | 2.10 a  | 1.76 a  |
| P4        |                      | 2.43 a  | 2.13 a  |
| P5        |                      | 2.33 a  | 2.09 a  |
| Average   |                      | 2.27 a  | 2.05 a  |

The development of fruit skin thickness in the two varieties is in accordance with the phase of growth and development which is differently intervals for each variety. According to Lu et al. (2017), in Satsuma Mandarin the development of fruit is characterized by the increase of diameter size along with the thickening of fruit skin until the age of 30 days. Then with increasing age, the size of the fruit increases but the thickness of the skin decreases until the ripening phase.

The occurrence of broken fruit in Terigas Mandarin began in May, with an average number per sample of 2.8 and 3.6 in May and June, respectively. The thickness of the fruit peel was not significantly affected by all treatments. The thickness of fruit peel on normal fruit is higher than that of broken fruit, both in May and June observations, whereas for control (P1), the fruit skin tends to be thinner than other treatments (Figure 7).
Based on macro nutrient uptake on the leaves and skin of the fruit above, it appears that the levels are classified as optimal. According to Cronje et al. (2013), if the crop has absorbed nutrient levels optimally but the incidence of broken fruit is still happening, then this shows that nutrient factors are not a single factor in the damage, but there are still many factors that influence it. Moreover, the decreasing pattern of average fruit skin thickness is not followed by the absorption pattern of the fruit (Figure 8). According to Cronje et al. (2013) depletion of fruit peels when fruit develops is because the environmental conditions are not optimal, including nutrient imbalance, low Ca and K and high P. If the nutrients in the fruit peel do not significantly affect the thickness of the fruit skin, it is suspected that the occurrence of thinning on the fruit skin is much influenced by the genetic characteristics of the plant itself. The application of Ca to plants should increase levels of Ca $^{2+}$ in the cell wall of the skin and prevent degradation of pectin, cellulose and hemicellulose, reduce arabinose and galactose, and increase levels of water-soluble pectin on the cell wall (Blanco et al., 2010). However, according to Morgan (2005), the level of Ca present in the skin of Hamlin’s sweet orange fruit has no correlation with the quality, juice content and skin thickness of the fruit.

The thinner fruit skin formed, the higher and more significant the number of cracking fruit as indicated by the regression equation $Y = 20, 501-9, 702 X (R^2 = 67.5\%)$. According to Cronje et al. (2013), one of the causes of cracking in citrus fruit is because the skin is not thick enough to be able to withstand the pressure caused by the rapid expansion of the pulp in the fruit development phase. With the decrease of the Terigas Mandarin skin thickness in June (Table 7), the number of broken fruit also increased compared to the previous month (May).
CONCLUSION

The incidence of fruit cracking in Terigas Mandarin is caused by the decrease of fruit skin with the equation $Y = 20.501 - 9.702 X$ ($R^2 = 67.5\%$), however the thickness of the fruit skin does not correlate significantly with nutrient content in the fruit skin. Likewise, nutrient levels in fruit peel also do not correlate with nutrient levels in leaves.

Cracking of fruit in Terigas Mandarin is caused more by genetic traits; it is more sensitive than control variety (Pontianak Tangerine)

P3 treatment is able to prevent 50% of cracking fruit per plant sample compared to treatment P1 (control).

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THE EFFECT OF ECONOMIC OPPORTUNITIES, AVAILABILITY OF INFRASTRUCTURE, POSITIVE CULTURE, AND CAPITAL ACCUMULATION ON DEPTH / POVERTY GAP IN BALI PROVINCE, INDONESIA

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ABSTRACT
Poverty Eradication is one of the programs of SDGs (Sustainable Development Goals) implemented in all countries that ratify the SDGs Program which begins in 2015. The SDGs program shows that poverty alleviation programs are one of the countries' concerns to be abolished. This condition reflects that poverty alleviation programs are the concern of the world community to be abolished. Various poverty alleviation programs have been undertaken by the government to reduce the number and percentage of the poor. But until now the phenomenon of poverty still exist. The aims of this research are 1) to analyze the difference of depth/gap of poverty level in regency/city by region of development that are in South Bali, North Bali, and East Bali; 2) To analyze the effect of economic opportunity, infrastructure availability, internal condition (positive culture), and capital accumulation on the depth/gap of poverty in Bali Province; 3) Analyze the role of capital accumulation in moderating the influence of internal conditions (positive culture) on the depth/gap of poverty in Bali Province. The study was conducted in all districts/cities with the number of respondents in each district/city as many as 30 people of the poor, bringing the total of 270 respondents throughout Bali Province. Sampling technique to be used is a combination of snow ball sampling with accidental sampling and purposive sampling. Methods of data collection used were observation, interview, and in-depth interview. Analytical techniques used are Anova and the MRA (Moderating Regression Analysis). The results of the analysis show that: 1) There are significant differences in depth/gap of poverty rate according to the development areas of South Bali, North Bali and East Bali; 2) Two variables, namely internal condition (positive culture), and the capital accumulation have negatively affect on the depth/gap of poverty, but economic opportunity and infrastructure availability have no significant effect on the depth/gap of poverty in Bali Province 3) Capital accumulation moderates (reinforces) the influence of internal conditions (positive culture) on the depth/gap of poverty in Bali Province. Taking into account the results of this analysis, then the accumulation of capital into strategic variables in reducing the level of poverty that can be intervened by the government and others.

KEY WORDS
Poverty, depth/gap, economic opportunity, capital accumulation.

Inequality of development in various regions is seen as one of the factors that can affect poverty. Thus even distribution of development in all regions is one of the conditions for reducing poverty. In Tri Logi Pembangunan, one of its parts is the equitable development of development that will generate income equity, which aims to equalize people's income. There are various factors that can affect poverty in an area, both economic factors and non-economic factors. Economic factors are very important in the discussion of poverty given the determination of an individual or family in the category of the poor. Economically, various macro factors can influence poverty, such as economic growth, which can be reflected by how much investment is made to achieve certain economic growth. This economic growth can increase employment opportunities which are expected to increase people's income, so as to reduce the level of poverty in the area. So from economic factors, the role of economic growth becomes very important to be improved and maintained its sustainability so that employment opportunities can be created which is one of the factors that can reduce poverty.
As stated in the 1995 World Summit for Social Development by United Nations, that unresolved affairs in the 21st century are eradicating poverty (Nehen, 2012).

The importance of reducing poverty in addition to achieving the nation's development goals of achieving a just and prosperous society based on Pancasila, reducing poverty is also very important for the achievement of the goals of the SDGs (Sustainable Development Group) which one of its goals is related to poverty. In the SDGs the first goal is alleviating poverty which is referred to as no poverty. Thus the importance of the problem of poverty alleviation is used as the first goal in the SDGs. Countries that ratify the SDGs are not only developing countries, but also in developed countries that reflect poverty problems are also still faced by developed countries so that they are used as the first destination. As Adam Smith said, 1776 is in poverty and that there is no prosperous and happy society, if most of the population is in poverty and misery (Todaro and Smith, 2006). This statement from Adam Smith shows that how important the state is to overcome the poverty of its population. The income gap is closely related to poverty. The higher income gap between high-income and low-income populations will widen the income gap between the rich and the poor. Income disparities between community groups depend on natural capabilities, human capital, and other differences, so the role of government is very important in redistributing income to achieve better equity (Mankiw, 2002).

This view shows that the role of government is very important in overcoming the gap in the distribution of people's income due to differences in resources owned by the community. The high gap in the ownership of resources in the community, the quantity and quality of capital resources or capital accumulation, the quality and quantity of human resources, and other resource gaps in society determine income inequality in society whose end results are in the form of severity and poverty. In discussing poverty is not enough only related to the percentage of the poor, but also related to the severity of poverty which is reflected by the distance between the income of the poor and the existing poverty line. The higher the severity of poverty, the more effort must be made to alleviate poverty. Thus the analysis of poverty is not only related to the percentage of the poor that exist, but more important is the severity of poverty, or the poverty gap that occurs.

Handling the problem of poverty severity and poverty gap also reflects the level of justice in the community in handling poverty. So far, people with low poverty means that the distance of their income to the gatris limit is short of poverty, this group will be assisted first by the government so that they are faster to get out of poverty. This condition can show that the government is successful in overcoming poverty, even though justice is seen, the first thing to help is the population with more severe poverty. If those who are assisted first, the funds needed will be far more and not necessarily seen by the success of the government in alleviating poverty, and poverty alleviation programs will not be successful. Based on the concept of justice in relation to poverty alleviation, the study or discussion of the level of severity and poverty, it is very important to do to evaluate the level of justice in handling poverty problems.

Poverty can be caused due to the nature / cultural namely problems that arise in the community, and also related to the ownership of factors of production, productivity, and level of development of the community (Subandi, 2011). Furthermore, in addition to cultural factors, poverty is also caused by structural factors. In addition to the view of the causes of poverty because of cultural and structural issues, Shrapp, et.al in Subandi (2011) there are 3 causes of poverty, namely: 1) Micro, poverty can arise due to inequality or inequality in the pattern of ownership of resources which ultimately affects income distribution where unequal income; 2) poverty is caused by differences in the quality of human resources; 3) poverty can arise due to differences in access to capital. Harrod-Domar's theory (Subandi, 2011) states that capital accumulation is very important in increasing economic growth, which means that increasing economic growth will increase employment opportunities which in turn can increase population income. This condition will further reduce poverty. Capital accumulation that can affect poverty, is also influenced by several factors, such as lack of trade opportunities, lack of infrastructure, disease conditions, and population growth (Sachs, 2006). Amartya Sen in C. Nunes (2002) examines the causes of poverty related to the
paradigm of human resource development which is seen from the capabilities or capabilities possessed by HR. Poverty is said to be a function of lack of ability. Thus poverty will remain relatively constant because the speed of increasing income between one person and another is different. Team Unwin (2007) states that poverty can never be eradicated or eliminated. However, it is very important to eradicate poverty in absolute terms.

Research Objectives:

- Analyzing the difference in depth or poverty gap in districts / cities according to development areas, namely in South Bali, North Bali and East Bali;
- Analyzing the effect of economic opportunities, availability of infrastructure, internal conditions (positive culture), and capital accumulation on depth or poverty gap in Bali Province;
- Analyzing the role of capital accumulation in moderating the influence of internal conditions (positive culture) on the depth or gap of poverty in Bali Province.

Research Urgency. The depth or gap of poverty that reflects the economic condition of the poor is very important to be known and analyzed so that it can be known to those who are in a very poor condition, quite poor, less poor, or almost poor. This information is very important in order to help them overcome their poverty to be fairer, in the sense that those who should be assisted first are those who are very poor, not the near poor. The government has not categorized the level of poverty in providing assistance, for example, so that there is a possibility that those who are assisted in advance are those who are almost poor, not those who are very poor. This condition shows that there is an injustice in handling poverty alleviation that has been carried out by the government and observers of poverty. By paying attention to these conditions, then identify the depth or gap of poverty so that poverty alleviation can run more equitably. After being able to identify or classify the condition of the depth or poverty gap of the population, then the factors that can influence the depth or gap of the poverty will be examined and analyzed. By knowing the depth of poverty in each district / city, it will be possible to make policies that are fairer in helping poverty alleviation, namely which groups of people who must first be helped and which groups can later be helped so that they become more just. Likewise, knowing the area where the depth of poverty is higher, then that area must first be assisted, and more effort must be made to help the region. After knowing the factors that influence the depth of poverty, information on which factors should be given priority in the handling of the poor in order to be fairer in the effort to alleviate the poor.

Considering these conditions, this research is very important to do and contribute in order to: 1) obtain more comprehensive information to improve understanding of the conditions of the depth of poverty in Bali Province; 2) find various alternatives / ways that are more effective in reducing the depth of poverty; 3) can identify various opportunities that might be done by the government, and observers of poverty issues, to reduce the depth of poverty; 4) increase understanding of the effectiveness of various poverty alleviation programs that have been implemented by the government so far; 5) obtain feedback for various government policies to improve the effectiveness of these policies; 5) produce a manual for community service activities, especially for the poor to intervene in various research variables such as internal variables (positive culture) in reducing the depth of poverty.

LITERATURE REVIEW

Various definitions of poverty have been submitted by experts. A family is said to be in primary poverty if the total income cannot be used to meet the minimum needs for physical needs of the body, namely food consumption (Vit Wilson, 1986 in Sugiyarto et al, 2015). This concept emphasizes the fulfillment of physical needs to be able to live, especially food. In everyday reality someone is said to be poor if the income of the individual concerned is below the poverty line. The poverty line is different in value from one region to another, the determination of the poverty line has taken into account various things such as inflation conditions, general economic conditions of each region. Thus each region will have a certain
poverty line of magnitude and also vary according to time. The concept of calculating the number of poor people or a certain level of poverty by comparing it to a certain poverty line is called the headcount index. In Indonesia the poverty line is determined by the Central Statistics Agency (BPS) which is the basis for classifying the population whether in the poor category or not. Absolute poverty (absolute poverty) is a number of people who are unable to obtain sufficient resources to meet their basic needs (Todaro and Smith, 2006). Nehen (2012) states that poverty here is a poor population that is a population that is unable to obtain sufficient resources to meet basic needs.

Absolute poverty is calculated by comparing certain limits of the poverty line then compared with the per capita income of the population so that it will get a headcount or head count, so that it is known how many people are below or above the poverty line. Thus, in calculating the poverty level, both percentage and absolute use the poverty line with a certain value, such as USD 2, or USD 1, or using a certain poverty line determined by the district / city whose values vary according to the conditions of the region.

Depth or poverty gap reflects how much income must be increased so that the income of the poor can reach the poverty line or they will no longer be poor. The poorer the population is, the deeper the poverty will be so that more income will be needed to get them out of poverty. Likewise, the lower the depth of poverty, the less funds or income so that they get out of the poverty level. A fairer handling of poverty will pay attention to the level of depth or poverty gap. Fairer handling is helping those who are very poor, compared to the near poor.

To calculate the number of poor people in absolute terms as well as the percentage, only a certain poverty line is needed. However, the number and percentage have not reflected a more comprehensive and in-depth condition regarding the condition of poverty. The number of poor people and the same percentage has not shown that the conditions of poverty in the two regions are the same. This same condition still requires a more in-depth analysis of poverty or the depth of poverty and the severity of poverty. The gap or depth of poverty is determined by how far the average income of the poor is in one area with the existing poverty line. The distance between the average income of the poor and the poverty line is called the gap / depth of poverty. The farther the distance between the average income of the respondent and the poverty line, the deeper the gap / depth of poverty, and vice versa. So it can be calculated from all these poor individuals how much additional income is needed so that all poor individuals have income equal to the poverty line (Nazara, 1997). Thus between one poor individual with another poor individual will require different income additions to be able to achieve income equal to the poverty line. The more additional income needed means that poverty is getting deeper / deeper into poverty, and vice versa. So the gap of poverty is nothing but the total amount of total income needed so that all poor individuals have income equal to the poverty line.

![Poverty Depth](image)

*Figure 1 – Poverty Depth*

Figure 1 shows the poverty gap or depth that is illustrated by the distance of points D and E. The EE line shows population income and the DD line is the poverty line. The highest
gap / depth of poverty is in the population that earns income at point E, which has the widest distance with point D. The population classified as poor is the population from A to B, while above B to C are classified as non-poor. The more right from A to B the lower the depth of poverty. In poverty alleviation programs that are more equitable to be helped out of poverty are those who are in income E. However, in general, the amount of funds for poverty alleviation is limited, so that the success of poverty alleviation is higher, there is a tendency for those who have a shorter poverty gap to be alleviated / assisted first. This condition certainly looks unfair, because those who should be assisted first are the poorest. This is what drives the depth and severity of poverty to be considered in poverty alleviation programs to be fairer.

METHODS OF RESEARCH

The research carried out in all districts/cities in Bali Province by considering areas that have pockets of poverty in an effort to find research respondents. Until now the data shows that in all districts / cities there are still a large number of poor people whose numbers and percentages have not moved much from previous years.

There are 2 types of data used in this study, namely quantitative data and qualitative data. There are several characteristic differences between the two types of data. Sekaran, (2010) states that quantitative data is data that has a certain unit of calculation and can be applied to mathematical operations such as added, subtracted, divided, or multiplied. In this study can be mentioned some examples of quantitative data used include depth or poverty gap, age of respondents and family members, number of years of respondent and family success, number of family members, capital accumulation, demographic conditions, and household income. Qualitative data is data that is not numeric and does not have a specific unit of calculation. In this study there are quite a number of research variables in the form of qualitative data such as internal variables (positive culture), availability of infrastructure seen from access by the poor population to various types of existing infrastructure, economic opportunities, condition of the walls of the house, type of bathing water, washing, latrines and so on.

This study uses 2 data sources namely primary and secondary data sources. The source of primary data is mainly obtained from research respondents, namely residents who are classified as poor, and informants, including officers from the agency who handle poverty alleviation issues, some of the poor people. The primary data in this study is used as the main data to answer the research objectives. Supporting data is also needed in this paper, which can come from secondary data from BPS and other sources. Examples of secondary data that are used for example are the distribution of the poor both in absolute and relative terms, as well as by different districts / cities and at different times.

Sugiono (2000), states that the population is the region of generalization from which the sample will be taken. Every research that uses primary data to answer the research objectives will identify the research population. The research population will depend on the research objectives that the researcher wants to answer. Thus the population in this study is the entire population whose income is below the poverty line, or it can be said that the population is classified as poor. The number of poor respondents who will be examined in each district / city is determined by quota as many as 30 people in each district / city so that the total respondents become 270 people. The selection of a sample of 30 people in each district / city uses the consideration of samples that have been classified as statistically large samples to be applied to parametric statistics of 30 people. There are 2 sampling techniques in general, namely probability sampling and non-probability sampling and accidental sampling and snowball sampling including non-probability sampling (Silalahi, 2009). In this research the sampling technique that was first used was accidental sampling, namely who was met first by the researcher and he was the population of this study then an interview would be conducted. Furthermore, based on the respondent's instructions, the next respondent will continue to search, and so on until the desired number of respondents is
obtained. So after accidental sampling technique will be continued with snowball sampling technique until the number of samples is obtained according to the desired amount.

Some methods or methods of data collection that can be used by researchers to collect data on social research include observation, interviews, experiments, and survey techniques (Jogiyananto, 2004). In this study there are several data collection techniques that can be used, among others, the first is observation, which has been used by researchers when preparing research proposals. After the observation method, the data collection techniques used are interviews and in-depth interviews.

In assessing the conditions of depth of poverty or poverty, the statistical analysis technique used is statistics. Average (mean), median, mode, decile, percentile, maximum or minimum value that can be used for descriptive statistics. In addition to seeing or assessing the depth of poverty. After analyzing descriptively, then inferential analysis is carried out to answer the research objectives.

Data analysis techniques that will be used to answer the research objectives in this study adapted to the research objectives to be achieved. In accordance with the objectives of the data analysis technique research that will be used is inferential statistics namely regression with moderation that has an associative level of explanation. Regression with moderating variables is a data analysis technique which is an extension of regression analysis by adding one variable namely the moderating variable in the analysis model used or what is called the MRA (Moderating Regression Analysis). The moderating variable is the capital accumulation variable.

RESULTS AND DISCUSSION

Respondent education in this study was also shown to see trends between education and income of respondents. The following is the distribution table of respondents according to education. Data in Figure 2 shows that the education level of respondents is mostly at the elementary level and below, which is about 76 percent of the total respondents, and the remaining around 24 percent has secondary school education especially junior and senior high school, where only about 10 percent have a high school education. When viewed on average by looking at the number and percentage of respondents in each age group, it can be said that the average education of respondents is at the level of primary school education. With such an average education, it can be said that the productivity of respondents tends to be low. Low productivity will be followed by low income.

![Figure 2 – Distribution of Respondents by Education](image)

Data from the results of this study indicate that most respondents are men, which is about 70 percent and the remaining 30 percent are women. The greater number of male respondents related to the status of the head of the family, which is generally male, and the respondents in this study were the majority of family heads. Judging from the marital status, only 6 percent are unmarried (one of the family members) and the rest are married and widowed/divorced. So there are quite a lot of respondents who are family heads who are widows or widowers who are elderly and live alone or live alone without other families.
Differences in the level of depth of poverty according to development areas. The depth of poverty between development regions can show how the intensity and success of development are carried out in all fields in the region concerned. In the Province of Bali, the development area is often divided into 3 regions, namely North Bali (Buleleng and Jembrana Regencies), South Bali (Tabanan, Badung, Denpasar, and Gianyar) and East Bali (Bangli, Klungkung, and Karangasem). Differences in the intensity of development in all fields can affect the differences in income received, thus affecting the depth of poverty that occurs.

Table 1 – Average Level of Poverty Depth, Minimum, Maximum in the Development Area of Bali Province

| No | Development Area | Average | Minimum | Maximum |
|----|-----------------|---------|---------|---------|
| 1  | South Bali      | 24.95   | 1.82    | 161.65  |
| 2  | East Bali       | 34.15   | 0.95    | 188.44  |
| 3  | North Bali      | 63.01   | 4.36    | 250.90  |
| 4  | Total           | 36.48   | 0.95    | 250.90  |

Source: Primary Data Processing Results, 2018.

The results of the analysis in this study indicate that there are differences both in the data on the average level of poverty depth and the data on the lowest level of poverty and the highest among the regions of development. The average depth of poverty in the North Bali Development Area is 63.01 percent which indicates that on average the income of the poor must be increased by 63.01 percent from their original income to reach the poverty line in their respective regions. This also means that to be above the poverty line, income must be increased by more than 63.01 percent for the poor population in the North Bali development area. In the East Bali Region, the average depth of poverty reached 34.15 percent, which means that on average around 34.15 percent of the income of the poor must be increased from their original income to reach the poverty line. To be above the poverty line, their income must rise above 34.15 percent. For the South Bali Development Area, the average poverty level reaches 24.95 percent, which means that the average income of the poor must be increased above 24.95 percent to reach income above the poverty line. In total, the average depth of poverty in Bali Province reached 36.48 percent, which means that the average income of the poor must be raised above 36.48 percent of their original income so that no more people are classified as poor. The following is a test of the average difference in the level of poverty between Bali's development regions.

Table 2 – Results of Different Mean Test of Poverty Depth Levels among Development Area in the Province of Bali

| No | North Bali | East Bali | South Bali | Significance of Different Tests |
|----|------------|-----------|------------|--------------------------------|
| 1  | 63.01      | 34.15     | -          | 0.001                          |
| 2  | 63.01      | 34.15     | 24.95      | 0.000                          |
| 3  | -          | 24.95     | 24.95      | 0.006                          |

Source: Primary Data Processing Results, 2018.

The data in Table 2 shows that there are differences in the level of poverty between development regions in the Province of Bali. The highest average depth of poverty is found in North Bali, and the lowest is in South Bali. If tested statistically with an average difference test, it turns out that all the differences are significant not only at the 5 percent significance level, also significant at the 1 percent significance level. The greatest level of difference exists between North Bali and South Bali, not only can be seen in absolute terms, but also seen from the level of significance of 0.000. The smallest difference is between the regions of East Bali and South Bali, however, the three development regions have a significantly different average depth of poverty. This condition shows there are differences from various sides between the three development regions, where development in the South Bali Region which is often also called the Sarbagita Region can be said to be the most successful by
looking at the average lowest poverty depth. This condition is strongly supported by investments in various fields, especially in the tourism industry as the leading development sector in Bali Province. This condition affects the level of economic growth and higher per capita income compared to other development areas. Likewise, the percentage of poor people in the Sarbagita Region (South Bali Development Area) is lower than in other regions. The 2016 data shows that the average poverty rate in the Sarbagita Region is around 3.4 percent, while the other areas are much higher (BPS, 2017).

Economic growth reduces poverty through two ways, namely creating employment opportunities and increasing wages (C. Nunes, 2002). Public expenditures today are a very important instrument which act in the economic, political and social development of a country (Çakerri et al., 2014). The opposite of economic growth, namely the economic crisis will have an impact on increasing the poor population (Suryahadi and Sumarso, 2003). Although tourism development is in the entire province of Bali, it is mostly found in the South Bali Development Area. By looking at this condition, the equal distribution of investment in all fields of development should be directed more to the North Bali Development Area to reduce the depth of poverty. Inclusive economic growth which is expected to reduce poverty, but on the contrary economic growth caused by increased non-investment consumption will be difficult to reduce poverty as the results of research by Zuhdiyaty (2017) which states that the level of economic growth that is not qualified cannot reduce poverty.

Influence of economic opportunities, availability of infrastructure, positive culture, and accumulation of capital to depth / poverty gap in Bali Province. The discussion of poverty is not only related to the number or percentage of poor people in an area, but what is more important and fairer is the depth or gap of poverty that occurs. Depth or poverty gap reflects the distance between the income of the poor and the poverty line in each region. In this study the dependent variable used is the depth of poverty which is thought to be closely related to economic opportunities. In this study also used capital accumulation as a variable that moderates the influence of economic opportunities, infrastructure availability, and internal conditions (positive culture) to depth or poverty gap in Bali Province. With this model can be made structural equation and figure as follows:

\[ Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 X_3 + E \]

Based on the results of the data analysis, the equation can be conveyed as follows:

\[ Y = 40,287 - 7,031X_1 + 2,473 X_2 - 7,434 X_3 - 0,055 X_4 + 0,018 X_5 X_3 \]

Where: \( Y \) = depth or poverty gap; \( X_1 \) = economic opportunity; \( X_2 \) = infrastructure availability; \( X_3 \) = internal conditions (positive culture); \( X_4 \) = capital accumulation; \( X_4X_3 \) = moderation of capital accumulation with a positive culture.

**Figure 3 – The role of capital accumulation in moderating the influence positive culture on the depth or gap of poverty in Bali Province, Indonesia**
Economic opportunity variable ($X_1$) has a negative influence on the level of depth or poverty gap with a probability or significance of 0.582. These results indicate that economic opportunity variables have a negative effect, but not significant. This negative influence gives a general meaning that the higher the economic opportunities they have, the lower the depth or gap of poverty they have. In this study this negative sign shows respondents who have economic opportunities; the poverty depth is lower than the respondents who do not have economic opportunities, although statistically insignificant. O’Connor (2000) states that economic inequality is the cause of poverty, so economic inequality must be reduced. Reform in the economic field is also one way to reduce poverty (Siggel, 2010). Annim et al. (2012) in Sugiyarto et al. (2015) viewed the relationship between inequality and poverty as a pragmatic relationship, namely that the gap causes poverty to worsen or the gap is a form of poverty.

Infrastructure availability variable ($X_2$) in this study does not have a negative effect on the level of depth or poverty gap. This condition shows that the availability of infrastructure in this study does not affect the level of depth or existing poverty gap. This condition also shows that there are other variables that are more instrumental in determining the depth of poverty. In general, the availability of infrastructure in Bali Province is in adequate condition, so that the optimization of the role of infrastructure availability is related to other variables being very important. Sarma (2007) states that if they are very poor, then they will not be able to get out of poverty, if not so poor there may be little income saved. In the poor, all income is used to meet the needs of life. This is the main problem for the poor.

Internal conditions/positive cultural variable ($X_3$) has a negative effect on depth or poverty gap. The probability or significance of this variable in influencing the depth of poverty or poverty gap is 0.039. This means that there is a significant negative influence of internal / positive condition variables on the depth or poverty gap or this positive internal / cultural condition variable has a significant negative effect on the level of 3.9 percent. This condition also means that the higher the positive cultural conditions, the lower the level of depth / poverty gap that occurs. Someone is classified as culturally poor if the person has an attitude of not wanting to try to improve his living conditions, even though there is an effort from another party to help him, that person feels not poor (Windia, 2015).

Capital accumulation variable ($X_4$) also has negatively affects on the level of depth or poverty gap. The higher the accumulation of capital owned by the poor, the lower the level of depth or poverty that occurs. The probability or significance of this variable is 0.079. If a significance level of 10 percent is used, this capital accumulation variable has a significant negative effect on the depth of poverty or poverty gap. Strictly speaking it can be said that capital accumulation affects the depth or gap of poverty at a significance level of 7.9 percent. Thus it can be concluded that capital accumulation is one of the independent variables which also has a significant influence on the depth / gap of poverty in the Province of Bali. This result is consistent with research conducted by Sachs, 2006 that causes poverty is the accumulation of capital that is not owned by the poor.

The role of capital accumulation in moderating the influence of internal conditions (positive culture) on the depth or gap of poverty in Bali Province. In Economic Growth Theory, the accumulation of capital becomes very important in spurring economic growth in an area (Harrod-Domar, 1946 in Mulyadi S, 2014). Economic growth is an important variable in reducing the unemployment rate which has implications for increasing people’s income which can also directly affect the depth or gap of poverty that occurs in the community. Seeing the importance of the role of capital accumulation in increasing population income, in this study is used as a moderating variable that can strengthen the influence of internal conditions (positive culture) on the level of depth or poverty gap. The results of data analysis show that the variable capital accumulation in moderating the influence of internal conditions (positive culture) on the level of depth or poverty gap has a positive sign with a value of 0.018. The meaning of this positive value is that capital accumulation strengthens the influence of internal conditions (positive culture) on the depth or gap of existing poverty. Thus it can be concluded that capital accumulation is a moderating variable that strengthens the influence of internal conditions (positive culture) on the depth/gap of poverty in Bali Province.
This condition can be interpreted as capital accumulation owned by the poor can increase motivation to get out from their poverty conditions.

CONCLUSION

Some conclusions that can be drawn from the results of data analysis and discussions that have been carried out previously are presented as follows.

There is a significant difference in the level of depth / poverty gap between development areas in Bali Province, namely North Bali with an average poverty depth of 63.01 percent, East Bali around 34.15 percent and South Bali with an average depth / poverty gap at the lowest of 24.95 percent. This data shows a significant difference in the average depth / poverty gap between development regions in Bali Province.

Variables of economic opportunities and infrastructure availability have no significant effect on the level of depth / poverty gap, while internal conditions (positive culture) and capital accumulation have a significant negative effect on the level of depth / poverty gap in Bali Province.

Capital accumulation moderates or strengthens the influence of internal conditions (positive culture) on the level of depth/poverty gap in Bali Province. This means that capital accumulation strengthens negative influences of internal conditions (positive culture) to the depth /gap of poverty in Bali Province.

SUGGESTIONS

Based on the results of the analysis that has been carried out and the conclusions that have been submitted, the following suggestions can be submitted.

Accumulation of capital becomes very important both as a dependent variable and a moderating variable, thus increasing capital accumulation such as assistance for business capital, as well as assistance to improve the quality of human resources as other forms of capital.

Internal conditions (positive culture) that have a significant negative effect on the level of depth /poverty gap, so the increase in motivation and enthusiasm of the community to come out and increase confidence to be able to get out of their conditions through various socialization and other activities is very important to do both by the government and people who have commitment on the problem of poverty conditions.

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DEVELOPMENT STRATEGY OF MINI-SCALE SHRIMP FARMING ON PLASTIC POND (BUSMETIK) IN GEMILANG MINAJAYA FISH FARMING GROUP OF TEGAL CITY

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ABSTRACT
Vannamei shrimp farming is a fisheries sub-sector that is being promoted by the government. The right strategy is needed in the development of vannamei shrimp farming, so that the farming activities can run sustainably. This research aimed to determine the management of vannamei shrimp farming activities, business analysis, internal and external factors and appropriate development strategies for Mini-Scale Shrimp Farming on Plastic Pond (BUSMETIK) in Tegal City. This research was descriptive research and did not test the hypothesis. This research used a case study method, which was a form of research aimed at describing existing phenomena. The sampling technique used was purposive sampling and the respondent collection technique used was non probability sampling. The data obtained were analyzed quantitatively and descriptively. In addition, business analysis and SWOT analysis were also conducted to the data. The sample chosen in this research was Gemilang Minajaya Fish Farming Group of Tegal City. The results showed that Gemilang Minajaya Fish Farming Group of Tegal City with a pond area of 1,221 m² was a vannamei shrimp producing area that was quite influential in Tegal City, with production volume from 2018 reaching 2,111.21 Kg. However, its farming activities had not fully met Best Management Practice (BMP), especially in the process of managing farming waste and the lack of green belt areas. It was suspected that the high organic matter in water quality was caused by the results of the farming waste. The condition that currently attacked vannamei shrimp was a white feces disease. From business analysis point of view, the income was Rp. 46,469,122/cycle with business efficiency (R/C ratio) of 148. Based on internal factor analysis, the greatest strength (S) was facilities and infrastructure (0.67) and external factor analysis showed that the biggest threat (T) was shrimp disease (0.76). The right alternative strategy was ST (Strengths-Threats) with a total score of 4.1 and the SWOT quadrant was in position II which was more likely to rely on existing strengths to take advantage of opportunities despite high threats. The alternative strategy used was to exploit the potential of existing land, optimize farm environmental factors to reduce threats of disease and establish cooperation with various fisheries stakeholders to establish green belt areas as an embodiment of sustainable and environmentally-friendly fisheries development.

KEY WORDS
Litopenaeus vannamei, business analysis, development strategy, white feces disease.

Vannamei shrimp (L. vannamei) is one of the leading commodities determined by the Ministry of Marine Affairs and Fisheries. This animal has a large market share which makes many investors want to invest their money in vannamei shrimp farming. The increasing demand for vannamei shrimp from year to year is based on the rapid growth of the world’s population and awareness of fulfilling nutritional needs, where shrimp contains a lot of protein. Shrimps are the prima donna which have export potential, in which more than 50% of the country’s foreign exchange from fishery products comes from shrimp commodities. Thus the shrimp industry is increasingly promising, especially with the introduction of vannamei shrimp species whose productivity reaches 6-10 tons/ha/year (Yasin, 2013).

The data above shows that the development of vannamei shrimp farming in Tegal City is very rapid. The potential can be developed for sure. The development of vannamei shrimp farming requires special studies so that the determined strategy can run well. In addition,
determining the right strategy can also increase shrimp production as well as its sustainability. This research was conducted by approaching the technical aspects, economic aspects, as well as external and internal factors to develop a strategy for developing vannamei shrimp business. The technical aspects include the method of farming carried out by farmers, such as land preparation, stocking of seeds, feeding, harvesting, marketing and other farming activities related to technical aspects. The business analysis referred to in this research refers to the efficiency of vannamei shrimp farming. The concept of efficiency itself is the action of maximizing results by using minimal capital (labor, material and tools). Efficiency is the ratio between output and input (Mubyarto and Hamid, 1987). Internal and external factors are materials used for SWOT analysis. SWOT analysis is the identification of various factors systemically to formulate business development strategies. This analysis is based on logic that can maximize strengths and opportunities, but can simultaneously minimize weaknesses and threats (Rangkuti, 2001).

In order to develop vannamei shrimp farming, there are several obstacles to be solved, including costs. This is because the development of vannamei shrimp farming requires a large amount of capital which is also in line with the facilities needed to support farming activities. Besides, human resources (HR) are also needed in the technical field of vannamei shrimp farming because HR is one of the important factors in the success of vannamei shrimp farming. These factors are also supported by government policies and other supporting institutions. Therefore, a socio-economic study of the farming community in Tegal City is needed. With the harmony between various parties, it is expected that the production of vannamei shrimp farming can be increased and it can run sustainably.

The activity of developing vannamei shrimp farming has strengths and opportunities, but it is also faced with obstacles that can be either weakness or threat. These factors need to be identified as a consideration for the strategy of developing vannamei shrimp farming in Tegal City with a SWOT analysis approach. But beforehand, it would be better if the internal conditions of the vannamei shrimp farming business are known. Therefore, it is necessary to do a business analysis study.

The purpose of this research was to find out the profile and management of Mini-Scale Shrimp Farming on Plastic Pond in Tegal City, to know its business analysis, to analyze the conditions of internal factors (strengths and weaknesses) and external factors (opportunities and threats) of BUSMETIK in Tegal City, and to formulate development strategy of BUSMETIK in Tegal City. This research was conducted in June - August 2018, at Gemilang Minajaya Fish Farming Group. Secondary data collection was carried out in various related offices, such as the Marine and Fisheries Service of Tegal City.

**MATERIALS AND METHODS OF RESEARCH**

This research was descriptive research that aimed to describe systematically, factually and accurately about the facts and the nature of a particular population or region (Singarimbun, 1991). The research method used was a case study method, which was a form of research aimed at describing existing phenomena, both natural phenomena or human-engineered phenomena (Sukmadinata, 2007). The research sample was chosen intentionally (purposive), i.e. the research location was chosen intentionally for certain reasons that were adjusted to the research objectives (Effendi, 1998) and the sampling technique used was non-probability sampling (Sugiyono, 2009). The sample chosen in this research was Gemilang Minajaya Fish Farming Group located in Tegal City. Gemilang Minajaya Fish Farming Group was chosen as the research sample because of its experience in vannamei shrimp farming and achievements.

This research did not test hypotheses or did not use hypotheses, but described existing information in accordance with the variables studied. Primary data was obtained from the results of surveys, interviews and questionnaires. Secondary data was obtained from literature studies (journals, books and internet) as well as data from related institutions. The research variables observed in this research included: profiles of vannamei shrimp farms; management of vannamei shrimp farming activities; variables for business analysis (fixed
costs, variable costs, revenue, income, business efficiency); and variables for analyzing development strategies (SWOT analysis), namely strengths, weaknesses, opportunities and threats.

Stages of research conducted included; stage I which consisted of survey, observation, and interview to get information about BUSMETIK in Tegal City; stage II, namely secondary data collection sourced from the Marine and Fisheries Service (DKP) of Tegal City; stage III which consisted of questionnaire preparation for business analysis; stage IV was SWOT analysis based on identification of BUSMETIK problems in Tegal City; stage V was SWOT questionnaire data collection and business analysis; stage VI was testing the validity and reliability of instrument data using Microsoft Office Excel 2007; and stage VII was data analysis.

Some data analyses used to review the Busmetik development strategies in Tegal City based on the data obtained were; (1) quantitative analysis, namely analysis of decisions using numbers; (2) descriptive analysis, namely the accumulation of basic data in a descriptive manner, which did not need to find or explain interconnectedness, to test hypotheses, to make predictions, or to get meaning or implications, although research aimed at finding these things can also include descriptive methods (Singarimbun, 1991); (3) business analysis which included; a. Cost; b. Revenue; c. Income; d. Business efficiency (R/C ratio) (Soekartawi, 2002); and (4) SWOT analysis, namely an analysis used to identify and evaluate internal and external factors, namely systematic identification of various factors to formulate development strategies (Rangkuti, 2006). This analysis is based on logic that can maximize strengths and opportunities, but simultaneously can minimize weaknesses and threats related to BUSMETIK development in Tegal City.

Table 1 – SWOT Matrix

| External Factor | Internal Factor | STRENGTHS (S) Determining 3-10 internal strength factors | WEAKNESSES (W) Determining 3-10 internal weakness factors |
|-----------------|-----------------|--------------------------------------------------------|-----------------------------------------------------|
| OPPORTUNITIES (O) Determining 3-10 external opportunity factors | | SO STRATEGY Creating strategies to use strength to take advantage of opportunities | WO STRATEGY Creating strategies that minimize weaknesses to take advantage of opportunities |
| THREATS (T) Determining 3-10 external threat factors | | ST STRATEGY Creating strategies to maximize strength to overcome threats | WT STRATEGY Creating strategies that minimize weaknesses to avoid threats |

RESULTS AND DISCUSSION

Profile and Management of BUSMETIK Activities. Geographically, intensive vannamei shrimp farming carried out by Gemilang Minajaya Fish Farming Group is located in the coastal area of Panggung Urban Village, Tegal Timur Sub-District, Tegal City, Central Java Province, which was directly adjacent to the northern sea of Java and close to the Pantura main road (North Coast). Astronomically, farming sites are located at 6050’- 6053’ South Latitude and 109008’- 109010’ East Longitude, the farming location is the surrounding land with coastal tourism areas. Ponds located in Gemilang Minajaya Fish Farming Group consist of 3 plots that are loaned by the Tegal City Government to be utilized by Gemilang Minajaya Fish Farming Group with an altitude of 3-4 meters above sea level and an average temperature of 26 - 32°C.

Gemilang Minajaya Fish Farming Group is a fish farming group with vannamei shrimp commodities. The establishment of Gemilang Minajaya Fish Farming Group originated from members of Gulamah Joint Business Group (KUB) in dealing with famine, so that economic needs continued even though they did not carry out fishing activities. Famine is a problem that must be felt by every fisherman because fishing activities are very dependent on season and weather. From these problems, the members of the Gulamah Joint Business Group took the initiative to establish a group of cultivators/farmers so that the members’ income would increase or remain in the low season. Several meetings between members of the Gulamah
Joint Business Group which were assisted by Fisheries Extension Agency of Tegal City eventually formed a group of farmers who were named “Gemilang Minajaya” with a total of 13 people as its members. On July 6, 2017, Gemilang Minajaya Fish Farming Group was confirmed by the Panggung Urban Village Head with an inauguration number 144/154/VI/2017 and on July 17, 2017, it was legally legalized by the number: AHU-0010553.AH.01.07 Year 2017.

Water quality plays a vital role in BUSMETIK sustainability. This is because water acts as a medium for maintaining vannamei shrimp. The water quality in this research is divided into physical and chemical parameters.

Table 1 – Water Quality Parameters

| No | Parameter  | Unit | Pond 1 | Pond 2 | Standard (SNI 01-7246-2006) |
|----|------------|------|--------|--------|----------------------------|
| 1  | pH         | °C   | 7.6    | 7.9    | 7.0 – 8.5                  |
| 2  | Temperature| °C   | 32     | 30     | 28 – 32                    |
| 3  | DO         | ppm  | 4.2    | 3.6    | >3                        |
| 4  | Salinity   | ppt  | 25     | 25     | >15                       |
| 5  | TAN        | ppm  | 0.5    | 1      | <2                        |
| 6  | NH3 Union  | ppm  | 0.016  | 0.01   | <0.01                     |
| 7  | Alkalinity | ppm  | 175    | 180    | 100 - 300                 |
|    | Water Color|       |        |        |                           |

Source: Water Quality Laboratory of Marine and Fisheries Service of Tegal City (2017).

Based on data from Water Quality Laboratory of Marine and Fisheries Service of Tegal City above, it can be seen that the water quality in BUSMETIK activities in Tegal City is in accordance with the water quality standards for vannamei shrimp farming. Thus, there are no problems with the available water quality.

The intensification of vannamei shrimp farming in Tegal City develops very tightly. The matter can be seen from the production volumes and values of vannamei shrimp. In 2016, the production volumes and values tended to experience an increase, the production volumes and values of vannamei shrimp can be seen in Table 2.

Table 2 – Production Value of Land Fisheries per Quarter according to the Type of Commodities in Tegal City in 2016 (000 Rupiah)

| Period   | Pond  | Fish Pond | General Waters | Fish Seeds |
|----------|-------|-----------|----------------|------------|
| 1. Quarter I | 1653 690 | 42 240 | - | 32 250.00 |
| 2. Quarter II | 3 102 050 | 115 040 | - | 14 100.00 |
| 3. Quarter III | 4 393 328 | 151 632 | - | 8 049.80 |
| 4. Quarter IV | 3 748 610 | 214 200 | - | 21 000.00 |
| Tegal City | 12 697 678 | 523 112 | - | 75 399.80 |

Source: Marine, Fisheries, Agriculture and Food Service of Tegal City.

Based on interviews and observations, BUSMETIK management activities in Gemilang Minajaya Fish Farming Group of Tegal City include; (1) land preparation and repair, (2) biosecurity application, (3) water preparation, (4) prawns seeds selection and distribution, (5) feeding management, (6) water quality management, (7) harvesting and (8) waste management. Of the various BUSMETIK management activities in Tegal City, the main problem is the management of farming waste that has not been well accommodated. There is no WWTP in the farming area so that the wastewater is channeled directly to the water channel that empties into the sea and this will cause coastal pollution, while the water source used for farming comes from the coast.

Business Analysis. Business analysis study carried out in this research included: fixed costs /investment, variable costs/production, revenue, income, and business efficiency (R/C
ratio) in BUSMETIK in Tegal City. The results of business analysis calculations can be seen in Table 3.

Table 3 – Results of Business Analysis of Mini-Scale Shrimp Farming on Plastic Pond in Gemilang Minajaya Fish Farming Group, Tegal City

| Average per Year* | Land Area (m2) | Fixed Costs (Rp.) | Variable Costs (Rp.) | Revenue (Rp.) | Income (Rp.) | Business Efficiency (R/C ratio) |
|-------------------|---------------|------------------|---------------------|---------------|--------------|-------------------------------|
| 1221              | 18,583,500    | 109,867,500      | 156,336,622         | 46,469,122    | 1.48         |

* Values apply at the time of Research Data Collection.

The problem that occurs in economic conditions in BUSMETIK activities in Gemilang Minajaya Fish Farming Group of Tegal City is the decline in production prices. This is due to the decline in shrimp prices in the market, so that R/C ratio is 1.48.

Analysis of Internal and External Factors for SWOT Analysis. Internal factor indicators have been established including: (1) production volume, (2) facilities and infrastructure, (3) land potential, (4) business partners, (5) farm environmental factors, (6) pond management activities, (7) human resources (HR), (8) funding, (9) production fluctuations, (10) farming products. The results of internal strategy factors/Internal Strategic Factor Analysis Summary (IFAS) are presented in Table 4.

Table 4 – Internal Strategy Factors Matrix

| Internal Strategy Factors | Weight | Rating | Score |
|---------------------------|--------|--------|-------|
| STRENGTHS (S)             |        |        |       |
| -Production Volume        | 0.05   | 1.80   | 0.09  |
| -Facilities and Infrastructure | 0.14 | 4.80   | 0.67  |
| -Land Potential           | 0.06   | 2.20   | 0.14  |
| -Business Partners        | 0.13   | 4.50   | 0.59  |
| -Farm environmental factors | 0.09 | 3.10   | 0.28  |
| WEAKNESSES (W)            |        |        |       |
| -Pond Management Activities | 0.13 | 4.40   | 0.5   |
| -Human Resources (HR)     | 0.09   | 3.10   | 0.28  |
| -Funding                  | 0.09*  | 3.20*  | 0.30* |
| -Production Fluctuations  | 0.09   | 3.10   | 0.28  |
| -Farming Products         | 0.12   | 4.10   | 0.49  |
| TOTAL                     | 0.99   | -      | 3.62  |

The number of weighting scores of internal variables (strengths and weaknesses) is equal to 3.62. According to Umar (2001), the position of Gemilang Minajaya Fish Farming Group is on favorable criteria. The position of Gemilang Minajaya Fish Farming Group in competition with a weighted score of 3.62 can be seen in Table 5.

Table 5 – Internal Variable Analysis

| Value         | Competition Position |
|---------------|----------------------|
| 1.00 – 1.66   | Need to be avoided   |
| 1.67 – 2.33   | weak                 |
| 2.34 – 3.00   | tenable              |
| **3.01 – 3.67** | **favorable**     |
| 3.68 – 4.34   | strong               |
| 4.35 – 5.00   | dominant             |

Source: Umar (2001).

External Analysis/External Strategic Factors Analysis Summary (EFAS), related to threats and opportunities that exist within Gemilang Minajaya Fish Farming Group environment. External variables are measured quantitatively to find out the opportunities and threats that exist. The results of the analysis of external factors are presented in Table 6.
Table 6 – External Strategy Factors Matrix

| External Strategy Factors                                      | Weight | Rating | Score |
|---------------------------------------------------------------|--------|--------|-------|
| **OPPORTUNITIES (O)**                                         |        |        |       |
| -Land Potential                                               | 0.07   | 2.20   | 0.15  |
| -Demand on Shrimp Products                                    | 0.14   | 4.60   | 0.63  |
| -Shrimp Economic Value                                        | 0.12   | 4.10   | 0.50  |
| -Fishery Policy                                               | 0.12   | 4.00   | 0.47  |
| -Pond Management Activities                                   | 0.07   | 2.30   | 0.16  |
| **THREATS (T)**                                               |        |        |       |
| -Product Competition                                          | 0.12   | 4.10   | 0.51  |
| -Shrimp Disease                                               | 0.15   | 5.00   | 0.76  |
| -Fishery Policy                                               | 0.08   | 2.70   | 0.22  |
| -Environmental Pollution                                      | 0.14   | 4.70   | 0.67  |
| **TOTAL**                                                     | 1.01   | -      | 4.07  |

A favorable position means that the Gemilang Minajaya Fish Farming Group is in a safe condition in conducting farming activities. This is because other competitors are also in the same condition, namely in the condition of declining shrimp production due to white feces disease. The safe position must be addressed wisely, because the conditions can change at any time. Therefore, vannnamei shrimp farmers in Tegal City must improve the farming system, especially pond management and shrimp production.

The analysis used to formulate a development strategy is SWOT matrix. The SWOT matrix is a combination of analysis of internal factors and external factors. The weight values of each SWOT element are presented in Table 7.

Table 7 – Weighting Value of Each SWOT Element

| Strengths | Value | Weakness | Value | Opportunities | Value | Threats | Value |
|-----------|-------|----------|-------|---------------|-------|---------|-------|
| S1        | 0.09  | W1       | 0.56  | O1            | 0.14  | T1      | 0.50  |
| S2        | 0.67  | W2       | 0.28  | O2            | 0.63  | T2      | 0.74  |
| S3        | 0.14  | W3       | 0.30  | O3            | 0.50  | T3      | 0.22  |
| S4        | 0.59  | W4       | 0.28  | O4            | 0.47  | T4      | 0.66  |
| S5        | 0.28  | W5       | 0.49  | O5            | 0.16  |         |       |
| **Total** | 1.99  |          | 1.35  |               | 1.90  |         | 2.11  |

Alternative and Alternative Priorities for BUSMETIK Strategies. External factors/External Strategic Factors Analysis Summary (EFAS) is related to threats and opportunities that exist within the environment of Gemilang Minajaya Fish Farming Group. External variables of score weighting in the SWOT table shows that the threat level on BUSMETIK is the highest (2.11). Although the level of competition is in a favorable position, farmers must be able to anticipate the threats that exist as early as possible, especially shrimp diseases. Existing threats can be minimized by utilizing the existing strengths and opportunities. This is done so that BUSMETIK development is successful. To realize this goal, the right strategy is needed in developing BUSMETIK in Gemilang Minajaya Fish Farming Group of Tegal City.

The results of the calculation of the analysis of internal factors and external factors above are then combined into the SWOT matrix which aims to formulate and determine the alternative strategies for developing BUSMETIK in Gemilang Minajaya Fish Farming Group of Tegal City. Alternative strategies are presented in Table 8.

Alternative strategy priorities in the research on BUSMETIK development prospects in Gemilang Minajaya Fish Farming Group in Tegal City can be seen by adding scores from SO, ST, WO and WT. Based on the weighting carried out, the priority of the strategy based on the SWOT ranking can be seen. Alternative strategies ranking for BUSMETIK development in Gemilang Minajaya Fish Farming Group of Tegal City can be seen in Table 10.

Figure 1 shows BUSMETIK development strategies in Gemilang Minajaya Fish Farming Group in the competitive (quadrant) position. This indicates that BUSMETIK activities at Gemilang Minajaya Fish Farming Group of Tegal City face various threats, but still have internal strength. The strategy implemented is to use strengths to take advantage of
the opportunities that exist in carrying out intensive vannamei shrimp farming.

Table 8 – Formulation of Alternative Strategies for BUSMETIK Development in Gemilang Minajaya Fish Farming Group of Tegal City

| Opportunities (O) | Strengths (S) | Weaknesses (W) |
|-------------------|---------------|----------------|
| - Land Potential  | - Production Volume | - Pond Management Activities |
| - Demand on Shrimp Products | - Facilities and Infrastructure | - Human Resource (HR) |
| - Shrimp Economic Value | - Business Partners | - Funding |
| - Fishery Policy | - Farm environmental factors | - Production Fluctuation |
| - Pond Management Activity | | - Farming Products |

**S-O STRATEGY**
1. Increasing the volume of vannamei shrimp production to meet the growing demand for shrimp products.
2. Adding other business partners related to farming activities and other sectors such as investors and stakeholders.
3. Improving pond management activities by taking into account farm environmental factors, the concept of biosecurity, Best Management Practices (BMP) and utilizing existing facilities and infrastructure.

**W-O STRATEGY**
1. Improving the competence and professionalism of human resources (HR).
2. Improving the quality of cultivated vannamei shrimp to meet shrimp demand in the local and export markets, where good quality shrimp will also have high economic value in the market. This strategy also aims to overcome funding problems.
3. Utilizing government policies that support fisheries development especially for the cultivation sector.

| Threats (T) | S-T STRATEGY | W-T STRATEGY |
|------------|--------------|--------------|
| - Product Competition | 1. Utilizing the potential of land and existing facilities and infrastructure to suppress product competition. | 1. Improving pond management activities, especially the problem of waste management. |
| - Shrimp Disease | 2. Optimizing farm environmental factors to reduce the threat of shrimp disease. | 2. Preparing competent human resources (HR) in national and global competition and being ready to compete with other regions. |
| - Fishery Policy | 3. Organizing cooperation with business partners and also the government to hold green belt areas as an embodiment of the development of environmentally-friendly and sustainable vannamei shrimp cultivation and minimizing environmental pollution. | 3. Applying appropriate fisheries policies on the results of farming products, so as to stimulate farmers to produce high quality shrimp products. |

Table 9 – Alternative Strategies Ranking for BUSMETIK Development in Gemilang Minajaya Fish Farming Group of Tegal City

| No. | Alternative Strategies | Value | Total Score | Rank |
|-----|------------------------|-------|-------------|------|
| 1.  | ST (Strengths-Threats) | 1.99 + 2.11 | 4.1 | 1 |
| 2.  | SO (Strengths-Opportunities) | 1.99 + 1.90 | 3.89 | 2 |
| 3.  | WT (Weakness-Threats) | 1.35 + 2.11 | 3.46 | 3 |
| 4.  | WO (Weakness-Opportunities) | 1.35 + 1.90 | 3.25 | 4 |

Figure 1 – Quadrant of BUSMETIK development strategies in Gemilang Minajaya Fish Farming Group of Tegal City

**O**

**W**

**III**

**Defensive**

**Conservative**

**Agressive**

**Competitive**

1.99:2.11
DISCUSSION OF RESULTS

Profile and Management of BUSMETIK Activities in Gemilang Minajaya Fish Farming Group of Tegal City. Based on Table 2, Tegal City has a productive farming pond area, it can be seen from the production in 2016 which experiences an increase quarterly. This shows that pond farming in Tegal City can be developed well, especially the vannamei shrimp commodity with BUSMETIK technology. If it is developed further, it can increase production.

Based on Table 1 (Water Quality Parameters) above it can be seen that the main problem of water quality in intensive vannamei shrimp farming activities in Tegal City is the high content of organic materials such as ammonia, nitrite, nitrate and phosphate. The high organic matter in the pond waters was allegedly caused by feed that did not decompose properly, as well as the lack of management of pond water quality so that the bottom of the pond waters has the potential to have high organic matter content. This is reinforced by Boyd (1990), that organic material comes from non-inedible feed, dead plankton, and the application of shrimp fertilization and feces on an ongoing basis which accumulates at the bottom of the pond. Pantjara and Rachmansyah (2010) stated that the application of probiotics by adding molasses in water can improve water quality which leads to increased growth and survival of vannamei shrimp.

Business Analysis Study. From the business analysis data (Table 3), it is shown that the level of net income and business efficiency of BUSMETIK at Gemilang Minajaya Fish Farming Group is currently optimal. Net income per cycle of Rp.46,469,122 with an area of 1,221 m² should be able to be increased. In addition, the efficiency level is almost close to 1. This means that the revenue obtained by farmers is almost close to the total costs incurred. Farmers mentioned that the problem of decreasing production was caused by the spread of White Feces Disease in vannamei shrimp which caused the growth of shrimp to slow down and there were several deaths. This certainly affects the level of Food Conversion Ratio (FCR), where feed in farming ranks first in production costs. The high feed expenditure is not balanced by the biomass of cultivated vannamei shrimp production. Under these conditions, farmers are encouraged to adjust stocking densities as well as the feed program provided. Feed is one of the important aspects in every aquatic farming activity. Feed is the largest production factor and reaches 50% or more of the total operational costs, so it needs to be managed properly so that it can be used efficiently for the cultivation. A good feeding program is needed to obtain maximum results in shrimp and fish farming activities (Nur, 2011). The reduced production volume until mid-2016 was coupled with the decline in the price of vannamei shrimp in the market. From the data obtained from the field (in August 2018), shrimp prices were determined based on size, namely: size 120 = Rp.32,000/Kg; size 100 = Rp. 45,000/Kg; size 60 = Rp.62,000/Kg; and size 50 = Rp.72,000/Kg. The price was considered by farmers to be less in line with the operational costs incurred. The causes of the decline in prices have not been known with certainty by the farmers. However, according to information obtained, the cause of the decline in shrimp prices was alleged by competition with other countries shrimp products and also the quality of shrimp due to white feces disease which causes porous shrimp texture. In addition, Indonesia’s current economic conditions also have a direct impact on rising production costs for vannamei shrimp, such as rising diesel prices and other production facilities.

Analysis of External and Internal Factors in SWOT and Alternative Strategies and Priorities in BUSMETIK Development in Gemilang Minajaya Fish Farming Group of Tegal City. Based on the results of the internal strategy factor matrix analysis (Table 4), the greatest strengths (S) in BUSMETIK in Tegal Gemilang Minajaya Fish Farming Group are facilities and infrastructure (0.67) and business partners (0.59). This strength must be added by optimizing existing facilities and infrastructure and adding business partners in fields other than food and seeds. The biggest weakness in the development of BUSMETIK in Gemilang Minajaya Fish Farming Group of Tegal City is pond management activities (0.5) and farming products (0.49). These two factors are the most logical reasons why shrimp production has decreased, especially the management of waste and farming products that have not met the standards. Tegal City (Table 5) is categorized in the criteria of favorable. A favorable position...
means that Tegal City is in a safe condition in conducting farming activities. This is because other competitors are also in the same condition, namely in the condition of declining shrimp production due to white feces disease. Based on the external factor strategy matrix (Table 6), the biggest opportunity for BUSMETIK development is the demand for shrimp products (0.63). According to the literature study conducted, the biggest demand comes from America, where Indonesia becomes the largest supplier of shrimp in the country. Meeting the needs of the shrimp market must also be accompanied by the quality of the shrimp itself, where shrimp must be free from disease (industri.bisnis.com). The biggest threats found in the development of BUSMETIK in Gemilang Minajaya Fish Farming Group of Tegal City are shrimp disease (0.76) and environmental pollution (0.67). These two things are the main problems in intensive vannamei shrimp farming. Waste of organic matter that is not handled properly can be a cause of shrimp disease. The consequence of this is the decrease in the quantity and quality of production.

Weighting value in the SWOT table (Table 7) shows that the threat level in vannamei shrimp farming is the highest (2.11). Existing threats can be minimized by utilizing existing strengths and opportunities. The SWOT matrix is a tool used to compile corporate strategic factors (Rangkuti, 2001). This matrix can clearly illustrate how external opportunities and threats are faced in BUSMETIK development activities at Gemilang Minajaya Fish Farming Group of Tegal City. The strategies produced are ST (Strengths-Threats) strategy, SO (Strength-Opportunities) strategy, WT (Weakness-Threats) strategy and WO (Weakness-Opportunities) strategy.

The ST strategy creates a strategy that utilizes strength (S) to overcome threats (T). Figure 1 shows the Busmetik development strategies in Gemilang Minajaya Fish Farming Group of Tegal City in the competitive (quadrant) position. This indicates that BUSMETIK activities in Tegal City face various threats, but still have internal strength. The first rank is the ST strategy with a weight of 4.1 (Table 9). Alternative strategies (Table 8) that can be done in accordance with priorities include: (1) utilizing the potential of land and existing facilities and infrastructure to suppress product competition. Land use must also pay attention to carrying capacity to minimize the possibility of environmental pollution and its impacts such as shrimp disease, cultural competition, and also for efficiency and exclusion; (2) optimizing farm environmental factors to reduce the threat of shrimp disease. This is also supported by improved management of pond activities that consider CBIB or Best Management Practices (BMP) of vannamei shrimp farming; (3) cooperating with business partners and the government to hold green belt areas as an embodiment of the development of environmentally-friendly and sustainable vannamei shrimp farming and minimizing water pollution.

The ST strategy is a strategy that relies on internal strengths to deal with existing threats. It is expected that with this strategy, farmers can anticipate existing conditions with their strengths and improve the management of vannamei shrimp farming (Marimin, 2004).

CONCLUSION AND RECOMMENDATIONS

The conclusions that can be drawn from the research on Development Strategy of Mini-Scale Shrimp Farming On Plastic Pond (Busmetik) In Gemilang Minajaya Fish Farming Group of Tegal City are as follows:

BUSMETIK activities in Gemilang Minajaya Fish Farming Group of Tegal City have a major contribution to Tegal City with production from 2018 reaching 2,111.21 Kg with a production value of Rp. 156,336,662, - The main problem at this time is the spread of white feces disease which is allegedly caused by a decrease in the quality of the farming environment. BUSMETIK activities at Gemilang Minajaya Fish Farming Group of Tegal City have also not adhered to sustainable and environmentally sound farming development, this can be seen from the management of waste management and the lack of green belt areas in Tegal City.

Revenues in 1 cycle in 2018 in BUSMETIK activities at Gemilang Minajaya Fish Farming Group of Tegal City is Rp.46,469,122, - with business efficiency of 1.48. However,
this number can be increased by suppressing white feces disease which causes a decrease in production. In addition, the low value of business efficiency is caused by the decline in vannamei shrimp prices and an increase in operational costs.

Based on the calculation of the internal strategy factor matrix (IFAS), the greatest strength (S) is facilities and infrastructure (0.67) and the biggest weakness (W) is pond management activities (0.56). Based on the calculation of the external strategy matrix (EFAS), the biggest opportunity (O) is the demand on shrimp products (0.63) and the biggest threat (T) is shrimp disease (0.74); and based on the SWOT analysis, the alternative strategy rankings obtained are ST strategy (Strengths - Threats) (total score of 4.1), SO strategy (Strengths - Opportunities) (total score of 3.89), WT strategy (Weakness - Threats) (total score of 3.46), and WO strategy (Weakness - Opportunities) (total score of 3.25).

Based on the SWOT analysis, the alternative strategy rankings obtained are ST strategy (Strengths - Threats) (total score of 4.1), SO strategy (Strengths - Opportunities) (total score of 3.89), WT strategy (Weakness - Threats) (total score of 3.46), and WO strategy (Weakness - Opportunities) (total score of 3.25); The alternative strategic priorities used are utilizing the potential of existing land, optimizing farm environment factors to reduce the threats of disease and collaborating with various fisheries stakeholders to establish green belt areas as an embodiment of sustainable and environmentally-friendly fisheries development.

Suggestions that can be given from the research conducted is that further studies are needed, namely: studies on policies that are in accordance with the conditions and situations of current vannamei shrimp farming; studies of the development model of environmentally sound farming areas; and studies of the problems of shrimp prices and the factors that influence them.

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STRATEGIC FOOD CONSUMPTION PATTERNS OF HOUSEHOLD IN INDONESIA

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ABSTRACT

In order to fulfill food, a study of food patterns is needed. Food consumption patterns of a household will change over time, and differ from region to region. Changes in consumption patterns over time are influenced by income changes, changes in people's awareness of food and nutrition, and lifestyle changes. The purpose of this research is to analyze: household food consumption pattern; the pattern of changes in food prices; and share of consumer expenditure on each food (rice, corn, shallot, chili, beef, and sugar). This study uses SUSENAS secondary data from 2011-2016. Data analysis with a descriptive quantitative method resulted in the conclusion: between 2011-2016 the average consumption of rice in urban areas is smaller than in rural areas. Conversely, consumption of beef in urban areas is greater than in rural areas, chili and shallot commodity prices are the most volatile commodity prices, the largest proportion of household food expenditure in Indonesia is for rice commodities, both in urban and rural areas. The results of this analysis have implications for the households to maintain the consumption pattern, especially to diversify the consumption of rice with other staple food.

KEY WORDS

Food consumption, food price, strategic commodity, consumption pattern.

Foods that include rice, corn, soybeans, beef, shallot, chili, and sugar are the basic necessities for human life (Agriculture Department, 2014). According to (Aman, 1995) and (Simatupang, 2012), corn, soybeans, and sugar are strategic commodities that are crucial to achieving the main goals of agricultural development: the dynamism of the village economy, strengthen food security, and reduce poverty and improve the economic welfare of the population. In addition, the four commodities are mainly soybean and sugar are vulnerable to international market turmoil. Therefore, these four commodities become "Special Product" for Indonesia. The importance of food according to the Agriculture Department (2014) is also indicated by the government's policy focus for 2015 - 2017 is to realize rice, corn and soybean self-sufficiency. Then followed by efforts to realize self-sufficiency of beef, sugar, shallot, and chili as a national staple.

Food is an important topic to study. Food is the most basic human needs and fulfillment is part of human rights guaranteed by the 1945 Indonesian Constitution. The fulfillment of individual food sufficiency is the essence of food security. Next thing to note in order to fulfill the adequacy of food is the consumption pattern. Household food consumption patterns will change over time, food consumption patterns will also differ from region to region. Changes in consumption patterns over time are influenced by income changes, changes in people's awareness of food and nutrition, and lifestyle changes (Samuelson & Nordhaus, 2004).

According to (Thiele & Weiss, 2003), and (Ogundari & Arifalo, 2013) there are differences in food consumption patterns between urban households and rural households. This condition led to different levels of diversification of household food in Indonesia. This difference is also accompanied by differences in income levels and food prices. Therefore, it is necessary to know the pattern of household food consumption of Indonesia, through the pattern of food expenditure allocation and the pattern of changes in food demand.

The purpose of this research is to analyze: (1) The pattern of the household for strategic food consumption; (2) The pattern of changes in strategic food prices; and (3)
Share of consumer expenditure on each strategic food (rice, corn, beef, chili, shallot, and sugar).

METHODS OF RESEARCH

The study used secondary data in the form of raw data of SUSENAS (National Socioeconomic Survey) in 2011-2016. The SUSENAS data used included: total household expenditure, total household food expenditure, quantity and total strategic food expenditure (rice, corn, beef, shallots, chilies, and sugar), as well as the type of area where the household lives.

Food commodities in this study include rice, corn, beef, chili, shallot, and sugar. These 6 foodstuffs are Indonesia’s strategic commodities. Descriptive analysis is used to look at household consumption patterns, and patterns of price changes, and the proportion of public spending on strategic commodities. Analysis of household preferences for strategic food consumption is calculated using the following formula:

\[ w_i = \frac{b_i}{x} \times 100\% = \frac{p_i \cdot q_i}{\sum p_i q_i} \times 100\% \]

Where: \( i = 1,2,...,6 \); \( i = 1 \) (rice), 2 (corn), 3 (beef), 4 (shallot), 5 (chili), 6 (sugar); \( w_i = \) Proportion of commodity expenditure \( i \) (%); \( b_i = \) Commodity expenditure \( i \) (Rp); \( x = \) Total expenditure from strategic food (Rp); \( p_i = \) price of commodity \( i \) (Rp); \( q_i = \) quantity of commodity purchases (kg).

RESULTS AND DISCUSSION

The Pattern of Household for Strategic Food Consumption. The success of the development of a nation is determined by the availability of qualified human resources (HR) quality, namely human resources that have a strong physical, strong mental, excellent health, and smart. This condition can be achieved if followed by adequate food intake (Bappenas, 2007).

Figures 1 and 2 shows that rice consumption in rural areas from 2011 to 2016 is always higher than in urban areas. This is because rural household income is lower than urban household income. Furthermore, Engel stated that the poorer the household, the more the proportion of income spent to meet food needs (Bourguignon & Chakravarty, 2003). Rice commodities have the largest expenditure compared to other food commodities. This shows the pattern of food consumption Furthermore in Indonesia is still dominated by high carbohydrates, especially rice as staple food. The same thing was put forward by (Jamal, Ariningsih, Hendiarto, Noekman, & Askin, 2016) that the average quality of food consumption in Indonesia is still low and less diversified, still dominated by carbohydrate food sources, especially from the grains.
Table 1 shows the amount of urban and rural household consumption for strategic food. The number of urban and rural household consumption always changes from year to year with insignificant changes. Changes in the pattern of household consumption of strategic food is influenced by several things, including: prices, income, and other social demographic factors. This is in accordance with the results of research conducted by (Widarjono, 2014).

Table 1 – Household Consumption of Strategic Food

| Strategic Food | TAHUN | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|-------|------|------|------|------|------|------|
| Rice           | Urban | 1.523| 1.528| 1.487| 1.466| 1.477| 1.504|
| Corn           |       | 0.014| 0.005| 0.011| 0.015| 0.029| 0.037|
| Beef           |       | 0.012| 0.011| 0.008| 0.008| 0.015| 0.013|
| Shallot        |       | 0.045| 0.053| 0.039| 0.047| 0.054| 0.053|
| Chili          |       | 0.056| 0.064| 0.055| 0.057| 0.095| 0.090|
| Sugar          |       | 0.131| 0.107| 0.117| 0.111| 0.126| 0.132|
| Rice           | Rural  | 1.907| 1.816| 1.792| 1.781| 1.775| 1.843|
| Corn           |       | 0.054| 0.018| 0.056| 0.055| 0.053| 0.077|
| Beef           |       | 0.004| 0.003| 0.002| 0.002| 0.005| 0.003|
| Shallot        |       | 0.046| 0.053| 0.041| 0.048| 0.052| 0.055|
| Chili          |       | 0.058| 0.062| 0.056| 0.056| 0.055| 0.090|
| Sugar          |       | 0.152| 0.142| 0.138| 0.135| 0.152| 0.155|

Description: Amount of consumption in kg.
Source: SUSENAS, 2011-2016.

The Pattern of Changes in Strategic Food Prices. The low diversification of food characterized by the dependence of rice consumption causes higher rice prices. This increase in rice price causes monthly inflation to be high and fluctuate.

Figure 2 – Household Food Consumption in Rural, 2011-2016

Figure 3 – The Pattern of Change in Food Price in Urban Year 2011-2016 (Source: SUSENAS, 2011-2016)
Figure 4 and 4 show that by 2013 all food items have increased. This food group contributed the most to inflation of 0.20 percent. Inflation in 2013 was the highest inflation rate since the 2008 crisis which reached 11.06 percent. This figure is an accumulation of previous inflation due to rising fuel prices.

Prices of shallot and chili (figures 3 and 4) both in urban and rural areas are very volatile between 2011-2016. Fluctuations in the price of chili and shallot are mostly due to the characteristics of the commodity. Chili, for example, is a perishable commodity and the presence or production of chilies and shallots is highly dependent on the season.

**Share Household Food Expenditure.** Consumer behavior can be known by looking at the proportion of consumer spending. The proportion of consumer spending for each food can illustrate the consumer’s preference for consuming food.
Discussing the proportion of expenditure, there are two factors that must be considered, namely price and consumption. Both of these factors influence the proportion of expenditure. If the proportion of the expenditure of one type of food commodity is of great value, it can not be directly concluded that the consumption level of the food commodity is also large, but it must be observed also the amount of the price. So it can be seen which factors are more influential on the proportion of expenditure, whether the price factor or consumption. Therefore, to complement the discussion on the proportion of food commodity expenditure in Indonesia, it is also presented data on consumption and average food prices in Indonesia (Figure 1-4).

Figure 5 and Figure 6 show that both urban and rural households are dependent on rice consumption. In both urban and rural areas, the highest share of rice expenditure is in 2015, which is 90.92% for urban areas and 94.29% for rural areas. This is caused by the increase in rice prices in 2015. From figure 3 and figure 4, it can be seen between the period of 2011-2015 the highest price of rice is in 2015.

CONCLUSION

The conclusions of this study are: (1) Between 2011-2016 the average consumption of rice in urban areas is smaller than in rural areas. Conversely, consumption of beef in urban areas is greater than in rural areas; (2) Chilli and shallot commodity prices are the most fluctuating commodities; (3) The largest proportion of household food expenditure in Indonesia is for rice commodities, both in urban and rural areas.

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THE ROLE OF FARMERS IN EFFORTS TO INCREASE THE EMPOWERMENT OF DAIRY CATTLE FARMERS GROUP: A CASE STUDY AT NGANTRU VILLAGE OF EAST JAVA PROVINCE, INDONESIA

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ABSTRACT
Empowerment is the process of, by and for the community, where people are accompanied or facilitated in making decisions and taking their own initiative so that they are more independent in developing and improving their living standard. This study uses a qualitative approach that aims to determine the characteristics role of farmers in an effort to improve the empowerment of groups of dairy farmers. The snowball sampling technique is a method for identifying, selecting and taking samples in a network or a continuous chain of relationships. The research uses three research approaches, namely, observation, in-depth interviews, literature studies (document analysis) as a triangulation process. The research findings show that farmers who have cattle < 5 tails still use conventional farming systems. The number of cattle ownership plays an important role in the group empowerment process. This is related to the existing social inequalities. Generally farmers who have a small number of cattle have different perceptions of thinking in the process of adopting the innovation and in community relations. Farmers who join the groups are the farmers with an education level of elementary school graduates and the majority of men who already married. This happens because the role of men after becoming head of the family is to control all activities that are outside the home, while women control activities that are inside the house. Character differences related to age, length of cattle raising, number of cattle, gender, and education level lead to differences in the mindset that will influence the decision-making process and adoption of technological innovations.

KEY WORDS
Empowerment, characteristics, farmer groups, qualitative approaches.

In an effort to support the fulfillment of the needs of fresh milk products on an ongoing basis conducted the improvement of the zootechnics application quality in the dairy farming business. The zootechnics enhancement activities include the selection of superior seeds, providing comfortable cages for cattle, providing good feed, handling the health, handling the reproduction, handling the production and handling the birth properly. Achievement of the above conditions requires improvement and development effort in Human Resources (HR), so that they have good knowledge, attitude and skills. Dairy cattle business is one of the livestock business that has strategic value, because the dairy products produced are needed by the community, besides that dairy cattle business can help the community, especially in terms of family economy, industrial raw material suppliers, providing employment and can help maintain the environment by utilizing organic fertilizers (Mukson, et al., 2009).

The low level of quality and productivity of cattle is caused more by a lack of capital, as well as knowledge or skills of farmers covering aspects of production, feeding, management of post-harvest results, application of recording systems, milking, sanitation and disease prevention (Nisa et al., 2012; Phillips, 2018; Muraya et al., 2018; Laurence et al., 2018; Agus & widi, 2018; Manning et al., 2018; Asai et al., 2018; and Pham & Waibel; 2018). Efforts to increase knowledge, attitudes, and skills are directed to foster the dynamics of institutional
organization of farmer groups, so that dairy farmers are able to experience an empowerment process that includes a desire to change in improving business activities, awareness to eliminate and release less productive habits that cause waste, the level of sense of belonging to the business and the institutional functions of the group is increasing, able to develop self-capacity and increase responsibility, spur the ability to achieve higher production in business, always improve self-competence so that it impacts on behavior change in a more efficient and effective business, and ready to face challenges to advance its business.

In the empowerment framework, the farmer organization system is needed for the development strategy of farmer organizations consisting of several sub-systems, namely: (1) rules for playing in institutions (rules of the game) involving all members; (2) the growth of member participants; (3) counseling and assistance in the application of technology; (4) increase the commitment of each manager and member to the goals set; and (5) developing a good environment (natural, social and economic). The group of dairy farmers in an area can be seen as a system of farmers' economic organization. Zakaria (2009) states that empowerment strategies in terms of farmers' economic development consist of: (1) organizational or institutional empowerment; (2) development of a network of business partnerships; and (3) competitiveness improvement, where all three must be carried out gradually, consistently and sustainable in accordance with the economic performance of the target farmers.

The development of dairy cattle is certainly inseparable from the role of groups of farmers in seeking their livestock to get added value and efficient management. Efforts that need to be developed in fostering and strengthening farmer groups are to strengthen the economic institutions of farmers in rural areas. Through a group of dairy farmers it is hoped that farmers can interact with each other, so that they have the impact of mutual need, enhance each other, strengthen each other, so that it will increase knowledge and ability in managing the dairy farming business system (Apriyanto, et al, 2017).

Most of the farmers in Ngantang Subdistrict are community farms that have a population of cattle between 2-25 cows. The number of farmers recorded by KUD Sumber Makmur currently 3100 farmers that produce 85 tons of milk per day. Most of the farmers, have run their businesses for 16-25 years. While the majority of farmers are in the age range of 31 to 70 years. Farmers whose the age are over 50 tend to be passive and walk in the same direction as young group members. Some studies suggest that age and work experience affect productivity (Almutahar et al., 2016). The last education of the majority of farmers in Ngantang Subdistrict was elementary school graduates, there were even some farmers who did not graduate from elementary school, only a few graduated from junior high school and high school graduated. Mulyawati, et al. (2016) stated that the education level of farmers can influence farmers in adaptation and innovation in raising livestock., Soekartawi (1988) in Waris, et al. (2015) states that those with higher education are relatively quicker to understand the adoption of innovation, and vice versa, those with low education are difficult to implement adoption of innovation quickly.

The dairy farming business in Ngantang Sub-district is carried out where among other business actors are interdependent on meeting the production and marketing facilities of the dairy products produced. Most of the milk produced by community farms are distributed to the cooperatives/KUD persusuan which are then marketed to the Dairy Processing Industry. Cooperatives provide services to farmers as members, in the form of marketing their products also serving the needs of concentrates, medicines, Artificial Insemination services, provide credit distribution facilities, and provide counseling services. In addition, institutionally among farmers, cooperatives and IPS must carry out their partnership patterns in a synergistic manner. The synergy of dairy cooperatives in the national dairy farming area must be supported by a targeted strategy. According to Kasim et al. (2011) in Priyono and Priyanti (2015), a strategy that can be done to develop dairy cattle among others by increasing population, empowering the business loans, optimizing the land, applying technology, business partnerships and improving the cultivation management.
Empowerment of farmer groups is inseparable from the characteristics of farmers (age, gender, education, number of livestock (tails) and breeding time) which is one of the determinants of success in the business of dairy cattle. From the above explanation, it is necessary to examine how the role of the characteristics of farmers in an effort to increase the empowerment of a group of dairy farmers in Ngantru Village, Ngantang Sub-District, Malang Regency, East Java.

METHODS OF RESEARCH

This study uses a qualitative approach. This approach makes it possible for researchers to choose the main strategy, namely, case studies, as revealed by Yin (2003) in Yona (2006) case study as a method in conducting a study of phenomena that occur with a focus on one's life experience (real life context). The selection of a case study strategy is based more on the characteristics and habits of the dairy farmer community at the research site, which is hereditary and continuously takes place in the community in Malang Regency. The strategy of this case study is expected to open the opportunity for dialogue among researchers, informants and subjects as well as the occurrence of interactions among and within the researchers, informants and subjects. This study refers to the constructivist paradigm (Cresswell, 1994) in Hajaroh (2010), in the sense that researchers will construct a model of empowerment of dairy farmers based on group dynamics and innovation in environmentally friendly dairy farming in the research location. So the results of this study, is a construction that is defined jointly between the researchers with the studied subject. The informant is determined by snowball technique. According to Nurdiani (2014), the snowball sampling technique is a method for identifying, selecting and taking samples in a network or continuous chain of relationships. The researcher presents a network through sociogram images in the form of images of circles that are linked or connected by lines. Each circle represents one respondent or case and lines show the relationship between respondents or between cases. Or the method in which the sample is obtained through the process of rolling from one respondent to another, usually this method is used to explain social or communication (sociometric) patterns of a particular community.

RESULTS AND DISCUSSION

The informants in this study were the core administrators and three members of the farmer groups assisted by the KUD Sumber Makmur and the Gemah Ripah IV independent farmer group in Ngantru Village, Ngantang Sub-District, Malang Regency. The characteristics of the informants in the study consisted of age, gender, last education, ownership of the number of livestock/cattle and experience in raising livestock/cattle.
Table 1 – Informant Characteristics

| No | Informant Characteristic | Criteria                  | Total | Percentage |
|----|--------------------------|---------------------------|-------|------------|
| 1. | Age                      | Young (16-30)             | 0     | 0          |
|    |                          | Adult (31-45)             | 6     | 50         |
|    |                          | Advanced adult (46-70)    | 6     | 50         |
| 2. | Gender                   | Male                      | 12    | 100        |
|    |                          | Female                    | 0     | 0          |
| 3. | Last Education           | Not completed in primary school | 1 | 8,3 |
|    |                          | Primary school            | 5     | 41,7       |
|    |                          | Junior high school        | 3     | 25         |
|    |                          | High school               | 3     | 25         |
|    |                          | College                   | 0     | 0          |
| 4. | Number of cattle (tails) | Small (1-5)               | 1     | 8,3        |
|    |                          | Medium (5-15)             | 6     | 50         |
|    |                          | High (>15)                | 5     | 41,7       |
| 5. | Length of cattle raising | New (1-5)                 | 0     | 0          |
|    |                          | Medium (16-25)            | 12    | 100        |
|    |                          | Old (26-40)               | 0     | 0          |

Age is a benchmark in the ease of receiving information, whether included in the productive and non-productive age groups and how much is the burden on the family (Puspitasari and Umrotun, 2016). The results of the research in Table 1 show that the age of respondents ranged from 16 to 70 years. Ages 31-45 years old are six people or 50%. Ages 46-70 years old are six people or 50%. Farmers who join the farmer group are mostly 31-70 years old. In this age range farmers have a high level of loyalty to the group. This is because farmers are more comfortable and pursue activities carried out by farmer groups. Utami (2015) states that age affects the ability to work. In accordance with Poluan, et al (2017), which states that the age level makes a person's ability to carry out activities either physically and the concept of different thinking. Young members become their own capital for the group because they have stronger physical conditions, broad insight, a desire to try new things, have creative thinking skills and the ability to access information through higher technology. Conversely, someone who is old or elderly tends to be passive. Supported by Sujaya, et al. (2018) which states that the increasing age of farmers will reduce the physical abilities and thinking of farmers that have an impact on decreasing the productivity achieved in the dairy farming business.

Male respondents amounted to 12 people or 100%. Farmers who are members of farmer groups are mostly men who already married. This happens because the role of men after becoming head of the family is to control all activities that are outside the home, while women control activities that are inside the house. Farmer group is an organization that is run out of the house, so people prefer a man who played an active role in it. This causes the majority who join the farmer groups are the men that an active role in it (Ojango et al., 208; Wardrop et al., 2018; Wijers, 2019; Rubin et al., 2019; Wilson, 2018, and Mead, 2018). This is what causes the majority who join the farmer group to be male. The results of this study are in accordance with Hubeis (2010), which states that the division of labor according to gender refers to the way in which all types of work (reproductive, productive and social) are divided between men and women, and how the work is valued and appreciated in a society or certain cultures. In the household, there is a clear division of tasks between family members. Men are generally dominant in public and community work, while women are dominant in reproductive work (domestic activities: preparing food, collecting water, looking for firewood, shopping, maintaining family health and nutrition, caring for and educating children).

The role of men in farmer groups, has not been able to optimize the group empowerment process. In groups besides the men's thinking, women's thinking is also needed, so that there is no gap in opinion. In addition, when women are involved in groups, it is expected that group problems will be resolved, especially those related to women. So that it will have a positive impact on the group empowerment process. Hasanah and Musyafak (2018), stated that gender equality involves men and women in addressing issues related to
development, reforming institutions to build equal rights and opportunities, and encouraging economic development that strengthens equality of participation. This kind of approach aims to improve the gaps that continue to exist regarding access to natural resources and the ability to express opinions.

The majority of the last education of the respondents was elementary/primary school graduates, namely as many as five people or 41.6%, did not graduate from elementary/primary school equal to one person or 8.3%, graduated from junior high school and high school respectively three people or 25%. Farmers who join the farmer group are mostly elementary/primary school graduates. According to Poluan, et al (2017), the higher the education level of a person, the more knowledge or insight that is possessed, whether it is creating, applying new technologies as well as new innovations. In addition, the higher the level of education, the more mature someone is in acting. Thus, educational factors have a negative impact on the group empowerment process, because groups will find it more difficult to provide education and change the mindset of members.

Murwanto (2015) added that the level of farmer education is an indicator of population quality and is a key variable in human resource development. Adequate farmers’ education can facilitate the process of receiving livestock innovation and technology. According to Yusdja and Ilham (2006) in Hastang (2014), low-educated human resources (HR) will hamper livestock business development, and according to Yasin and Dilega (1993) in Hastang (2014) that high-educated and knowledgeable farmers are fast and precise in accepting and implementing new innovations. Thus farmers who are highly educated have greater opportunities to increase income. This is in accordance with the results of Misriani’s research (2011) that the level of education is positively correlated with farmer income. This condition is certainly an important note considering the aspirations that the members of the group want to filter out certainly have relevance to the level of formal education that members of the group have. This is in line with Ibrahim’s (2001) opinion that the higher the level of education, caused the individual insight gets better and the more diverse sources of information they use so that the types of messages received is also increasing.

Farmers in Ngantang Subdistrict who join the farmer group have the majority of livestock businesses on a household scale, where the number of dairy cows owned ranges from 1-25. Types of farmers in Ngantang Subdistrict according to KUD Sumber Makmur are classified into three, namely: small farmers with a population of 1-5 tails, medium with a population of 6-15 tails, and large with a population of > 15 tails. From the information obtained during the interview, the veterinarian from the KUD institution said that farmers who have <5 tails of cattle still use conventional farming systems. The number of cattle ownership plays an important role in the group empowerment process. This is related to existing social inequalities. Generally farmers who have a small number of cattle have different perceptions of thinking in the process of adopting innovation and in community relations.

Soekartawi (1988) in Lestari, et al (2009); Senyolo et al. (2018); Tutusaus et al. (2018); Jayashankar et al. (2018); Ntshangase et al. (2018); Massaro & de Theije (2018); Lima et al. (2018); Arvila et al. (2018); Soto et al. (2018); and Alomia-Hinojosa et al. (2018) states that many new technologies require large scale operations and high economic resources for the need for innovation adoption, so that the scale of farming scale is always positively associated with innovation adoption. Conversely the use of better technology will produce economic benefits that can also expand the further farming business.

Farmers who join the group have been in business for 16-25 years. Farmers who have been running livestock business for a long time will be easier to implement technology than beginner farmers. This is because more experience makes farmers can make comparisons in making decisions. Role in making decisions that have been experienced will have a positive impact on the process of empowering groups. Djamali (2000); Rougoor et al (1998); Musvoto et al. (2018), and Mankiw & Nortje (2014) states that adequate education and experience will open horizons of understanding the technical principles and economic principles that become the requirement for the success of a farming manager. However, the long experience of farming can also make farmers more careful in making decisions, as stated by Soehardjo and Patong (1973), in Hastang (2014) that farmers who have more
experience will always be careful in acting with the existence of bad experience in the past. With the long experience of farming that has been undertaken, then it is expected that the farmer has been skilled in the technical business of his livestock, so that farmers can think rationally and make the right decisions in developing their livestock through farmer groups.

Popkin (1986); Rose et al. (2018); Šūmane et al. (2018); Xu et al. (2016); Higgins et al. (2018); Rigg et al. (2018); Guéneau (2018); Garforth (2015); Donati (2019); and Mayer (2018) argues that the activities of farmers in running their livestock business make farmers think rationally about the conditions in the world of animal husbandry/ farming. Farmers are independent individuals in implementing decisions that are considered most appropriate and in accordance with their expectations. The experience of cattle raising causes a sense of responsibility for everything that is done in making all decisions.

The characteristics of the following farmers play an important role in the process of empowering farmers. Differences in character related to age, length of cattle raising, number of cattle, gender, and level of education lead to differences in the mindset that will influence the decision making process and adoption of technological innovations.

**CONCLUSION AND RECOMMENDATIONS**

Based on the findings of this study concluded that the number of livestock/cattle ownership plays an important role in the group empowerment process. This is related to the existing social inequalities. Generally farmers who have a small number of cattle have different perceptions of thinking in the process of adopting innovation and in community relations. It can be seen that character differences related to age, length of cattle raising, number of cattle, gender, and level of education cause differences in the mindset that will affect the decision making process and adoption of technological innovation. Old-aged and low-educated farmers tend to be followers and are slow to adopt innovation. This research recommends the importance of the role of government extension/counseling agents more indicated through regular monthly meetings/yasinan for both independent groups and KUD to disseminate government activities and other information regarding dairy farming.

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QUALITY OF LANDRACE PIG LIQUID SEMEN DURING THE COLD SAVE PROCESS USING BTS AND TRIS AMINOMETHANE / DILUENTS EGG YOLK 20% ON 2-5°C

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ABSTRACT
Landrace pigs are often found in East Nusa Tenggara, which can fulfill the community's protein needs and Artificial Insemination can be used to improve the genetic quality of pigs. The aim of this study was to determine the shelf life of the quality of the spermatozoa of Landrace pigs using BTS thinners and tris aminomethane + egg yolk 20%. This research was conducted at the University of Timor Agriculture Faculty Laboratory using Landrace pig semen. The research method was laboratory experiments using 2 treatments with 10 replications, namely T1 (BTS) and T2 (Tris Aminomethane + egg yolk 20%) which were stored at refrigerator temperature 2-5°C. The variables observed were individual motility and total motile spermatozoa. Data were analyzed using Randomized Block Design (RBD). The percentage of motility and total motile sperm were tested using Pearson's Chi Square with an expected value of 40 million motile sperm / ml. The results showed that the length of storage for the 3 hours of thinners did not have a significant effect (P> 0.05) while the storage time for the 6th hour, 9th hour, 24.48 and 72 percent motility of T1 individuals with 66.5%, 61.5%, 52.5 %, 42.5%, 32% were significantly different (P <0.05) towards and T2 was 63%, 57% 47%, 37%, 22.5%. The conclusion of this study is that BTS thinners have the ability to maintain the percentage of individual motility longer than Tris Aminomethane + egg yolk 20%.

KEY WORDS
Liquid semen, landrace pig, individual motility, total motile spermatozoa, beltsville thawing solution.

Pigs are one of the meat producing commodities that have great potential to be developed, this is because pigs have beneficial traits and abilities including rapid growth, high litter size and good ration efficiency (75-80%) and the percentage of carcass high (65-80%) with cuts made at 12 months of age (Aberle et al. 2001). Increased productivity of livestock in Indonesia has been carried out by applying livestock reproduction biotechnology through Artificial Insemination (AI) techniques to improve genetic quality (Susilawati, 2013). The use of frozen semen for certain areas has limited constraints of liquid nitrogen. One alternative to overcome this obstacle is by using liquid semen for AI. Liquid semen has many advantages such as easier manufacturing techniques and lower costs (Zaenuri et al., 2014). Making liquid semen also requires diluents that have easy and inexpensive conditions and are able to provide nutrients as an energy source for spermatozoa (Susilawati, 2011).

BTS diluents are currently the most used by AI farmers because of their affordable price and satisfying results. The results of the study of Kadirvel et al. (2005) showed that BTS could be used as a thinner for pig semen with a shelf life of 4 days at 17 °C, with motility at the 4th day observation reaching 64.43%. Another study by Kommisrud et al. (2002) stated that using BTS thinners for 6 hours of storage at 16-18 ° C showed a percentage of 79.8% spermatozoa motility.

Tris Aminomethane thinner is one of the most widely used semen diluents. Its use is often combined with egg yolk. The results of a study by Yohana, Ducha, Rahardjo (2014) showed that egg yolk tris aminomethane thinners were able to maintain the quality of cow semen (motility, viability, spermatozoa abnormality) because of the complete composition.
Costa et al. (2016a) revealed that Tris aminomethane + 20% egg yolk diluent was better than CEP-2 + 10% yolk base diluent in the treatment of motility, viability and sperm crossing of ongole abnormalities for 7 days during the cooling process. The Da Costa et al. (2016b) study showed that liquid semen stored for 1 and 5 days after dilution with tris aminomethane + 20% diluent egg yolk produced conception rate (CR) was 86.67% and 83.33%, while service per conception (S/C) are 1.31 and 1.44.

Based on the background and thinking above, this study was conducted to test individual motility and total pig semen motile spermatozoa using BTS thinners and tris aminomethane + 20% egg yolk stored at a temperature of 2-5°C to determine the shelf life of semen liquid Landrace pig and can be used in the process of artificial insemination (Al).

**MATERIALS AND METHODS OF RESEARCH**

The research was carried out at the Laboratory of the Faculty of Agriculture, University of Timor, Kefamenanu City Subdistrict, North Timor Tengah Regency, East Nusa Tenggara Province from September to October 2018. The material used in this research was semen from the 3 (three) Landrace pig studs with 3 years old and 270 kg pig weight using dummy (artificial parent). Semen used in this study had motility criteria for ++ period and individual motility ≥ 70%. Egg yolks come from laying chicken eggs that are still new (egg age less than 3 days).

Semen from the reservoir is tested macroscopically and microscopically. Macroscopic tests include volume, color, consistency and pH. Microscopic tests include concentration, motility, viability, abnormalities and membrane integrity of the spermatozoa.

This research method is a laboratory experiment with experimental design in this study using the Randomized Block Design (RBD) method with 2 treatments with 10 replications as a group. The treatments carried out were BTS and Tris Aminomethae + 20% egg yolk diluents stored in a refrigerator with a temperature of 2-5°C. Observations were made after storing the 3rd, 6th, 9th, 24th, 48th and 72nd hours.

**Making BTS Diluents.** The basic diluent used is a diluent ready to use BTS®. Making diluents begins with weighing 5 g of BTS powder and inserted into an Erlenmeyer glass, adding aquabides 100 ml then homogenizing the mixture for minutes until homogeneous, and stored at a waterbath at 37 °C after semen is collected.

**Making Aminoethane Tris + Egg Yolk 20% Diluent.** Beginning with mixing tris aminomethane, citric acid, lactose and fructose in the Erlenmeyer tube. Add 80 ml of distilled water and homogenize using a stirrer for 10-15 minutes. After being homogenized, then put it in a pan and heated to boiling for the purpose of sterilization. The temperature is reduced from 100°C to 37°C. Add penicillin and streptomycin antibiotics and homogenize for 10-15 minutes. Put the mixture in the refrigerator until the third day, separated from the supernatant and the sediment, the results of the supernatant are ready for use. 20% yolk is added after the diluent is used (Susilawati, 2011).

The variables observed in this study were the quality of sperm from diluted landrace pig semen, including:

1. Individual mobility. One drop of semen was taken using an ose and placed on the glass of the object and covered with a glass cover then observed with a light microscope at 400x magnification (Susilawati, 2013; Ax et al., 2008).
2. Total motile spermatozoa. Total motile spermatozoa is the multiplication of semen volume with spermatozoa concentration and percentage of progressive motile spermatozoa (Susilawati, 2013).

Data from the results of the study were analyzed using variance analysis in Randomized Block Design (RBD) grouped by replication (shelter time). If there is a significant difference followed by a multiple distance test (Duncan). Total motile spermatozoa were tested with Pearson's Chi Square with an expected value of 40 million motile spermatozoa / ml. While the percentage of motile spermatozoa with an expected value of 40% to ensure that semen is still suitable for use in Al according to SNI.
RESULTS AND DISCUSSION

Semen Examination. The average value that evaluates semen from this study can be seen in Table 1.

Table 1 – Results of Semen Examination

| Color          | Yellowish white |
|----------------|-----------------|
| Smell          | Typical         |
| Consistency    | Liquid          |
| pH             | 7.0 ± 0.0       |
| Volume (ml)    | 221 ± 25.14     |
| Concentration  | 188 ± 53.01     |
| Mass motility  | ++              |
| Individual Motility (%) | 74 ± 2.10      |

In Table 1 shows that the results of the macroscopic examination of the average volume of Landrace pig semen produced by the study were 221 ± 25.14 ml per ejaculate in the range of 190-260 ml. The volume of Landrace pig semen produced in the study shows the normal range. In line with Sumardani et al., (2008) stated that the volume of fresh semen of pigs ranges from 150-250 ml per ejaculation. Measuring the volume of pig semen is done by looking at the scale on the tube used.

Observation of the color and smell of fresh pork semen is carried out during the shelter. The color and smell of the Landrace pig semen observed by the study showed that the fresh semen of Landrace pork was yellowish white (creamy) and distinctive. The color and smell of fresh semen produced shows that the condition of semen is included in the good category, not contaminated with blood, pus, urine or other contaminating substances. The degree of acidity or pH of Landrace pig semen during the study of ten constant shelters, i.e. an average of 7.0 ± 0.0 with liquid consistency. Fresh semen has a pH of 7 can be said normal because this result is in accordance with that stated by Bearden et al (2004), Garner and Hafez (2008) that the average pH of semen that is normal is 6.8-7.8.

Observation data in the study obtained the value of mass motility (mass movement) is ++. The motility of spermatozoa mass is categorized into 3 groups, namely spermatozoa mass movements resembling thick and fast moving clouds (+++), spermatozoa mass movements resembling thick clouds and moving rather slowly (+++) and spermatozoa movements resembling thin clouds and slow moving (+) (+) (Richard et al., 2016). The average value of mass motility from the results of the study shows the level of activity of the movement of the spermatozoa is classified as moderate.

The results of the microscopic test of the quality of liquid Pig Landrace semen obtained an average motility of 74 ± 2.10%. Individual motility presentations of the results of the study were classified as normal spermatozoa motility i.e. 50-80% (Garner and Hafez 2000). Factors that can affect the motility of spermatozoa in pigs are age, genetics, livestock, environment and feed. The percentage of motility in this study is relatively high, this is meant so that the spermatozoa used are more able to survive during the storage process. The average concentration of fresh spermatozoa obtained was 188 ± 53.01 (106 / ml). This result is the same as Sumardani (2008): Johnson et al. (2000); Gadea (2003); Robert (2006) which is 191.65 ± 71.1 (106 / ml).

Percentage of Individual Motility. The mean and SD values of spermatozoa motility in this study during storage at 2-5°C can be seen in Table 2.

The results of variance analysis showed that the length of storage of the 3 hours of diluent did not significantly affect (P> 0.05) the motility of the spermatozoa of Landrace pigs. This is presumably because at the 3rd hour the diluent still provides the same protection against the motility of the spermatozoa. Whereas Duncan Test results showed that the value of motility at the time of storage of hours to 6, 9, 24, 48 and 72 in treatment T1 (control) was 66.5%, 61.5%, 52.5%, 42.5%, 32% significantly different (P <0.05) against and T2 by 63%, 57% 47%, 37%, 22.5%. T1 thinner (BTS) produced the highest motility of individual spermatozoa at cold storing hours of hours 3, 9, 24, 48 and 72. This is because BTS thinners
are more suitable in maintaining quality (individual motility, viability, normal shape and membrane integrity) of pig spermatozoa during storing cold.

Table 2 – Percentage of Motility of Spermatozoa of Landrace Pigs at 2-5°C

| Hour | Treatment | Individual Motility (%) |
|------|-----------|-------------------------|
| 3    | T1        | 69 ± 2.11\(^a\)         |
|      | T2        | 69 ± 2.11\(^a\)         |
| 6    | T1        | 66.5 ± 3.37\(^b\)       |
|      | T2        | 63 ± 2.58\(^a\)         |
| 9    | T1        | 61.5 ± 3.37\(^a\)       |
|      | T2        | 57 ± 2.58\(^a\)         |
| 24   | T1        | 52.5 ± 2.64\(^a\)       |
|      | T2        | 47 ± 2.68\(^a\)         |
| 48   | T1        | 42.5 ± 2.64\(^a\)       |
|      | T2        | 37 ± 2.58\(^a\)         |
| 72   | T1        | 32 ± 3.5\(^b\)          |
|      | T2        | 22.5 ± 2.64\(^a\)       |

Note: T1 (BTS) and T2 (Tris Aminomethan + KT 20%); *) Different superscript in rows shows significant difference (P<0.05).

The results of variance analysis show that the longer the storage time the percentage of motility decreases. Membrane damage can cause ATP production to stop and the spermatozoa cannot move. This is in accordance with the statement of Zega et al. (2015) that diluents used to store semen are still needed macromolecules such as egg yolk which function to protect the spermatozoa during storage. Decreasing the percentage of spermatozoa motility during storage is due to the reduced energy reserves of spermatozoa to move (Nugroho et al., 2014).

According to the Indonesian National Standard (SNI) No. 8034 in 2014 regarding pig liquid semen, pig liquid semen that has been preserved must show spermatozoa motility of at least 40% and the movement of spermatozoa individuals with a minimum score of 2 (two). Based on Table 2. Above the average percentage of spermatozoa motility during the study of the use of BTS diluents during storage at refrigerator temperatures 2-5°C until the 48th hour still had motility in the SNI standard so that it could be used for artificial insemination (> 40%). While Tris Aminomethan + egg yolk 20% thinner average motility above 40% is only obtained at 24 hours after storage treatment.

Pearson’s Chi Square test results with the expected value of the percentage of motility at 40% at 48 hours T1 diluent were not significantly different (P> 0.05) indicating that the T1 thinner at 2-5°C can still be used for Al until the storage time 48th hour. Whereas at the 24-hour storage time T2 thinners were not significantly different (P> 0.05) which was stored at 2-5°C can be used for Al until the 24th hour saving time because total motile spermatozoa was not significantly different from the expected value of 40 million spermatozoa / ml.

Total Spermatozoa Motl. The effectiveness of the success of artificial insemination is determined also by the total motile spermatozoa and spermatozoa morphology (Nikbakht and Saharkhiz, 2011). Total motile spermatozoa were calculated by semen volume multiplied by the concentration of spermatozoa with the percentage of individual motility (Susilawati, 2013). The total calculation of motile spermatozoa in the BTS thinner treatment, Tris Aminomethan + KT 20% can be seen in Table 3.

Table 3 – Total Spermatozoa Motl Pig Landrace on Save Time 24th and 48th hours

| Thinner Treatment | Total motile spermatozoa (million / ml) |
|-------------------|----------------------------------------|
|                   | 24 Hour | 48 Hour |
| T1                | -       | 42.5    |
| T2                | 47      | -       |
| Expectation Value |          | 40.00   |

The results of the analysis using Pearson’s Chi Square with an expected value of 40 million motile spermatozoa per 100 million concentrations at 48 hours of storage for T1 were
not significantly different (P> 0.05). Equally for the T2 treatment at the 24th hour shelf life (P> 0.05).

This means that liquid semen using T1 diluents can still be used for IA until the 48th hour saving time because the total motile spermatozoa is not significantly different from the expected value of 40 million spermatozoa / ml, while the liquid semen uses T2 thinners stored at 2 -5oC can be used for IA until the 24th hour saving time.

CONCLUSION AND RECOMMENDATIONS

The best thinners in maintaining the quality of the Landrace pig semen at a temperature of 2-5°C are BTS thinners which have the highest percentage of motility compared to Tris Aminomethan thinners + 20% egg yolk. The results showed that BTS thinners can be stored for 48 hours while Tris Aminomethylene + KT 20% diluents can be stored for 24 hours with a minimum spermatozoa motility of 40% according to the Indonesian National Standard (SNI) No. 8034 of 2014 regarding the use of preserved Landrace pig liquid semen must show spermatozoa motility of at least 40%.

It is recommended that the use of Landrace pig semen for IA purposes using BTS thinners should be stored for 48 hours while the Tris Aminomethane + 20% Egg Yolk diluent is stored for 24 hours.

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EFFECT OF BOND CHARACTERISTICS AND MACROECONOMIC FACTORS ON THE RETURN OF CORPORATE BONDS IN THE SECTOR OF PROPERTY, REAL ESTATE AND BUILDING CONSTRUCTION

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ABSTRACT
The purpose of this research is to examine the effect of characteristics of bonds on the bond characteristics on the return of bonds in the sector of property, real estate, and building construction in 2013-2016. This research also aims to find out the relationship of macroeconomic factors to bond return in the sector of property, real estate, and building construction in 2013-2016. Data processing and analysis in this research use the panel data regression techniques. The data used are secondary data selected using purposive sampling with the bonds criteria issued by companies from the property, real estate and building construction sectors which are actively registered during the 2013-2016 period and not yet due, and the bonds ratings are listed in the Pefindo. The research results stated that duration has a positive effect on returns in the property, real estate, and building construction sector. Macroeconomics variable is: inflation and interest rate have a negative effect on bond return in property, real estate, and building construction sector. Other macroeconomic variables are: the exchange rate and IHSG have no effect on bond return. The price of gold as a substitution investment of bonds has a positive effect on bond return in property, real estate, and building construction sector. However, the world’s oil prices have no effect on returns.

KEY WORDS
Bond, bonds characteristic, bond return, macroeconomics.

Bond trading continues to increase every year. Bond trade frequency continues to increase from 2013 to 2016. In 2013, the bond trading frequency was recorded as many as 19.989 and then increased to 22.152 in 2014 and continue to increase until 2016 of 24.398.

The property sector which includes construction and real estate sector is one of the important sectors because it is able to attract and encourage activities in various economic sectors, influence the development of the financial sectors, and impacts on the economic growth and employment. The results of the review by the Ministry of Dinace in 2016 showed that within the last five years, the construction and real estate sector in Indonesia experience good growth despite the slowing growth trend, in line with the slowing down of national economic growth. The growth of the property, real estate, and construction sectors are in the top three positions after the sectore of basic industry and chemicals and financial sector, which amounted to 76.23%. The outstanding value of the property, real estate, and construction sector is at 22.20 bilion rupiah, which is the second highest after the financial sector. The high outstanding value and growth of corporate bonds in the property, real estate, and construction sector is caused by the new policy by the government.

Paisam (2012) stated that there are several factors influencing bond returns, namely the bonds characteristics, the internal and external factor of the company. One of the characteristics considered by investors is the age of bonds and bond ratings. Widoatmodjo (2007) stated that in the investment analysis in bonds, the investor also needs to perform a fundamental and mroeconomic analysis. The macroeconomic analysis includes calculated monetary developments, circulated money, inflation, exchange rates, interest rates, world oil prices and gold prices. Corporate bonds trading is also affected by market conditions and global sentiment. When the bond price increases, the stock price increases as well. Based on the above description, it is necessary to analyze bond characteristics and macroeconomic...
factors on the bond returns of property, real estate, and building construction sectors, so that inventors can choose bonds that provide high returns.

METHODS OF RESEARCH

Data processing and analysis in this research used a panel data regression technique. Cross section data were collected at a certain time, while time series data were collected from time to time. The model is as follows:

\[ Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + \beta_7 X_{7it} + \epsilon \]

Hypothesis: \( \beta_1; \beta_2; \beta_6; \beta_7 > 0; \beta_3; \beta_4; \beta_5 < 0 \).

Where: \( i \): n obligaition; \( t \): n observation period; \( \alpha \): Intercept; \( \beta \): independent variable regression coefficient (slope); \( Y \): return; \( X_1 \): duration (time); \( X_2 \): Exchange rate (nominal); \( X_3 \): Interest rate (persen); \( X_4 \): Inflation (persen); \( X_5 \): IHSG; \( X_6 \): Gold Price (nominal); \( X_7 \): Oil price (nominal); \( \epsilon \): error.

RESULTS AND DISCUSSION

Descriptive statistical analysis describes the character of research variables including returns, duration, exchange rates, interest rates, inflation, IHSG, gold price, and oil price. Descriptive statistical analysis contains information about the number of observations, maximum values, minimum values, mean, and standard deviation. The distribution of variable data in this research is presented in Table 1 below.

| Variable          | Return | duration | Exchange rate | Interest rate | Inflation | IHSG | Gold Price | Oil price |
|-------------------|--------|----------|---------------|---------------|-----------|------|------------|-----------|
| Mean              | 0.0065 | 4.273    | 12.425        | 1.715         | 1.370     | 4861.34 | 1243.27    | 70.17     |
| Median            | 0.0074 | 4.064    | 12.719        | 1.875         | 1.060     | 4894.61 | 1217.15    | 56.60     |
| Maximum           | 0.2587 | 5.573    | 14.657        | 1.938         | 4.430     | 5518.67 | 1594.80    | 105.37    |
| Minimum           | -0.1097| 3.475    | 9.720         | 1.188         | -0.430    | 4223.91 | 1060.30    | 37.04     |
| Std. Dev          | 0.0426 | 0.586    | 1.324         | 0.244         | 1.292     | 403.006 | 121.91     | 26.77     |
| Observation       | 176    | 176      | 176           | 176           | 176       | 176    | 176        | 176       |

Table 1 shows the number of data values owned by each variable of 176 data. Return variable has a mean value of 0.0065 with the highest value is 0.2587 and the lowest value is -0.1097. The mean of bond returns of property, real estate, and building construction sectors is 0.0065 which means that the mean bond return of property, real estate, and building construction sector from a total of 176 data is 0.0065 for the 2013-2016 period. The standard deviation of bond return variable on property, real estate and building construction sector is 0.0426 which means that the mean of bond return variation on property, real estate and building construction sectors in the observation year deviates from its mean of 0.0426.

Variable analysis describes the relationships that occur between variable movements with bond returns. Correlation coefficient aims to find the relationship value between the two variables, whether they are related or not. The negative and positive values illustrate the relationship of influence that occurs between two variable. Positive correlation coefficient value illustrates that the relationship occurs in the same direction, while a negative correlation coefficient illustrates that the relationship occurs between two variables is in the opposite direction. Significance tests aim to see whether the relationship between variables has a significant effect or not. If the regression value is less than 0.05 it shows that the relationship between variables has a significant effect.

Rahardjo (2003) explains that the longer the bonds life, the higher the yield rate given, this is a consequence of the potential risks that may arise due to the length of the bond maturity period. Coupons, durations, and maturity can be seen in table 2.
Table 2 – Coupon level, duration and maturity

| Kode Obligasi     | Kupon (%) | Durasi (tahun) | Jatuh Tempo (tahun) | Issue Date | Mature Date |
|-------------------|-----------|----------------|---------------------|------------|-------------|
| ADHI01ACN1        | 9.35      | 3.91           | 5                   | 3 Jul 12   | 3 Jul 17    |
| ADHI01ACN2        | 8.1       | 4.06           | 5                   | 15 Mar 13  | 15 Mar 18   |
| ADHI01BCN1        | 9.8       | 5.22           | 7                   | 4 Jul 12   | 4 Jul 19    |
| ADHI01BCN2        | 8.5       | 5.42           | 7                   | 18 Mar 13  | 18 Mar 20   |
| ADHISMT1CN1       | 9.35      | 3.91           | 5                   | 3 Jul 12   | 3 Jul 17    |
| ADHISMT1CN2       | 10        | 4.85           | 5                   | 15 Mar 13  | 15 Mar 18   |
| BSDE01BCN1        | 9.25      | 3.92           | 5                   | 5 Jul 12   | 5 Jul 17    |
| MDLN02B           | 11        | 3.82           | 5                   | 27 Des 12  | 27 Des 17   |
| PTPP01CN1         | 8.375     | 4.05           | 5                   | 19 Mar 13  | 19 Mar 18   |
| SSSA01B           | 9.3       | 3.95           | 5                   | 6 Nov 12   | 6 Nov 17    |
| WSKT02B           | 9.75      | 3.84           | 5                   | 5 Jun 12   | 5 Jun 17    |

The table shows that the value of the coupon in property, real estate, and building construction bonds ranged from 8.1 – 11%. The lowest coupon value is owned by bonds with code ADHI01ACN2 of 8.1%, while the highest coupon value is owned by obligation with code MDLN02B of 11%. The duration value correlates with the maturity of the bond. The greater the duration value, the higher the maturity value. The table shows that the variable maturity values range from 5-6 years. The 7-year maturity is held by bonds with a duration of more than 5 years.

Figure 1 – Duration of movement to return

Figure 1 describes the movement experienced by duration with bond returns. The correlation coefficient occurred between duration with a return is 0.2. This shows that the correlation that occurs between the duration and return is classified as weak. Positive values indicate that the relationship that occurs between duration and return is in the same direction. The longer the duration, the higher the return generated. The significance test between duration and return resulting in a value of 0.46. This shows that duration does not affect the return rate.

Based on the calculations performed, the correlation coefficient value between the exchange rate to the bond returns of property, real estate, and building construction sectors is -0.569. This shows that the correlation between the rupiah exchange rate to dollar with a bond return is categorized as medium correlation relationship. The negative correlation coefficient value shows that the relationship between rupiah exchange rate to dollar with bond return value is inversely proportional. This means that an increase in the rupiah exchange rate to dollar (depreciation) will decrease the bond returns value.

Based on the calculations performed, the correlation coefficient between interest rates and bond returns is -0.545; 0.545 value shows that the correlation between interest rates and bond returns is categorized as medium correlation. The negative value on the correlation coefficient between the interest rate and the bond return shows that the relationship is inversely proportional. The significance test on the interest rate with a bond return is 0.029. This explains that interest rates have a significant effect on bond returns. Interest rates affect the high and low yields of bonds, this is because when the interest rates increase, it will relatively reduce the returns received by investors (Ibrahim 2008). Interest rates in the 2013-2016 are shown in Figure 3.
The calculation result of the correlation coefficient between inflation and bond returns is -0.29. The coefficient value between 0.20 - 0.399 indicates that the correlation between inflation and bond returns is categorized as a weak correlation. Negative values indicate that the relationship between inflation and bond returns is inversely proportional. This means that increasing inflation will result in a decline in the bond return value, on the contrary, a declining inflation value will result in an increase in the bond returns value. The significance test results of 0.27 state that inflation does not have a significant effect on bond returns. Inflation movements from 2013 to 2016 is shown in the figure below.

The IHSG value and bond return have a negative correlation coefficient of -0.035. The value of 0.035 shows that the relationship between the IHSG value and bond return is categorized as a weak correlation. Negative values indicate that the relationship correlation of the value
of the IHSG with a bond return is inversely proportional. This means that an increase in IHSG value will result in a decline in bond returns on property, real estate and building construction sectors. The significant test result is 0.89. This value states that the IHSG movement does not affect the movement of bond returns. The IHSG value movement and the bond returns of property, real estate, and building construction sectors are shown in Figure 5 below.

![Figure 5 – IHSG movement on return](image)

The gold price correlation coefficient on bond return in property, real estate and building construction sectors is 0.621. This value shows that the correlation relationship between the gold price and the bond returns of property, real estate, and building construction sectors is categorized as strong correlation relationships. Positive values indicate that the correlation between the gold price and the return value of bonds in the property, real estate, and building construction sector is directly proportional. This means that an increase in gold prices will result in an increase in the value of bond return on the property, real estate and building construction sectors, and vice versa. The significance test results are 0.01. It states that the price of gold has a significant effect on bond returns.

![Figure 6 – Movement of gold prices on returns](image)

Based on the calculation results of world oil prices and bond returns the correlation coefficient is 0.504. It states that the correlation between the world oil price and the bond return value of property, real estate, and building construction sector is categorized as medium correlation relationship. Positive values indicate that the correlation of world oil prices with the bond return value of property, real estate and building construction sector is directly proportional. This means that an increase in world oil prices will result in an increase in bond returns on property, real estate and building construction sectors, and vice versa. The significance test result is 0.04. This explains that the world oil price has a significant effect on bond returns. The movement of oil prices and bond returns is shown in Figure 7.

The model selection was obtained from the results of the Chow Test and Hausman Test. It shows that the best model to use was the fixed effect model. The results of model testing in this study are shown in Table 3.
The results of the panel data regression show that there are four variables that have a significant effect on bond returns at the five percent rate, namely duration, interest rates, inflation and gold prices. This is explained by a probability value of less than 0.05. Meanwhile, the exchange rate, IHSG, and oil prices variable do not have a significant effect on the bond returns of property, real estate, and building construction sectors due to the probability value of more than 0.05. The number of cross sections (i) and time series (t) are 11 bonds and 16 months, respectively.

The research results show the duration variables have a positive significant effect on bond returns with a probability of 0.0232 at the $\alpha$ level of 5 percent and the coefficient of 0.331. The direction of the duration variable coefficient has a positive value which is in line with the research by Herlambang (2015) which showed that the duration variable has a significant positive effect on bond returns in the banking subsector. However, research by Gebhardt et al. (2003) showed that duration significantly affects bond returns and has a negative relationship direction.

The research results showed that the interest rate variable has a significant negative effect on the bond return value of property, real estate, and building construction sectors. This is explained by a probability value of less than 0.05 which is 0.0007. Interest rate variable coefficient value is -0.0655. This shows that the relationship of the effect of interest rates on the bond returns of property, real estate, and building construction sectors is inversely proportional. This means that an increase in interest rates will reduce the bond returns value of property, real estate and building construction sector.

The research results showed that inflation has a significant negative effect on the return bond with a probability of 0.0039 at the $\alpha$ level of 5 percent and the coefficient of 0 - 0.0060. The negative coefficient indicates that the effect of inflation on bond returns is in the opposite direction. This means that an increase in inflation will result in declining bond returns. Razali (2011) states that an increase in inflation causes excessive demand for goods as a whole and increasing prices in the economy of a region. This leads the company that issues bonds to issue higher operational costs.

The research results showed that gold price variable has a significant positif effect on the return bond. This states that changes in gold prices will have an impact on bond returns.
The coefficient result of the effect of gold prices on bond returns is 0.079. The positive value on the coefficient shows that the effect of the gold price is directly proportional to the bond return. This means that an increase in gold prices will result in an increase in bond returns. The results of this research are in line with the research conducted by Lucey (2010) which shows that the gold price has a significant positive effect on the value of the bonds. Gold trading which is also a long-term investment can be an investor's choice because gold can provide a hedge against inflation.

The research results showed that the rupiah exchange rate has no effect on the bond return. The exchange rate variable shows statistic results with a probability of 0.2857 and coefficient of 0.0655. Fahmi (2012) stated that when the rupiah weakens against dollar, one policy performed by Bank Indonesia is withdrawing the amount of rupiah distributed in the market. For example, by selling bonds to people, increasing the saving rate so that people are interested to save their money in the bank.

Variable of IHSG and world's oil price have no effect on return. This shows that the bond returns of property, real estate, and building construction sectors in the period are not affected by the IHSG. Research by Hastin (2013) stated that IHSG significantly affects the demand for bonds and the direction is negative. When the IHSG increases, the demand for bonds will decrease, and vice versa, when the IHSG decrease, the demand for bonds will increase. This shows that IHSG has no effect on bond returns but on bond demand instead.

**MANAGERIAL IMPLICATIONS**

Investors who want to receive a high return can see the characteristics of the bonds and the occurring macroeconomic factors. The longer the duration and the higher coupons on the bonds purchased, the return will also increase. The research results can also be used as a consideration to what extent higher interest rate changes affect the returns level obtained. When interest rates decline, investors should buy bonds because the returns obtained will increase.

The occurring inflation factors will also affect the returns that investors will receive in bond investing, the research results show that high inflation will reduce the rate of return, so investors should choose a property, real estate, and building construction bonds in low and stable inflation. The price of gold which is another choice of investment will also affect the return of property, real estate and building construction bonds. The increasing price of gold will have a positive effect on the increase of bond returns because investors are interested in investing in stable macroeconomic factors.

**CONCLUSION AND RECOMENDATIONS**

Based on the research results and statistic analysis in the previous chapter, it can be concluded that:

The bond characteristics variable used is duration, which has a positive effect on the return of property, real estate, and building construction sectors.

Macroeconomics variables are inflation and interest rate which have a negative effect on the return of property, real estate, and building construction sectors bonds. Other macroeconomic variables are the exchange rate and IHSG, which have no effect on bond return.

The gold price as substitution investment from the bond positively affects the bond returns of property, real estate, and building construction sectors. However, the world’s oil price has no effect on return.

**SUGGESTIONS**

Further research is expected to lengthen the research period on similar or different sector towards the variables concluded in this research. Therefore, there will be different expectations of research results. Additionally, other additional variables of finance
performance (interest coverage, cash flow to sufficiency, and DER) can be used as an alternative in further research on the factors that affect the bond returns such the condition of the company observed.

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THE ROLE OF GENDER DIVERSITY ON THE BOARD OF DIRECTORS AND TAX AVOIDANCE

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ABSTRACT
This research discusses how the role of the diversity gender of the board directors related to the prospect theory and the previous research that stated that women has a risk averse nature. The data that is used in this research come from all sectors of the company in Indonesia Stock Exchange excluding financial company in 2012 – 2017 with a total of observation 1399 samples. The analysis technique which is used in this research is regression linear method analysis with the help of STATA 14.0 software. Gender diversity on the director boards is a variable which will be tested whether it will affect the tax avoidance with several control variables. The result of the regression shows that gender diversity does not have any influence on tax avoidance. The additional testing is done by performing four interaction tests between independent variable with the variable of independent board, audit committee, big 4 auditor, and blockheld. The result indicates that there are not any tests which signify that gender diversity on the director boards affects tax avoidance. This result happened because of the companies which possess the high proportion of director boards does not necessarily have high ETR as well, so that it can be concluded that not all women have risk averse nature. This can be associated with the theory of liberal feminism that states women do not want to be distinguished from men except in terms of gender.

KEY WORDS
Gender diversity, tax avoidance, prospect theory, liberal feminism.

The development of tax ratio to Gross Domestic Product (GDP) in Indonesia tends to be flat since 2008, explained by the Minister of Finance Sri Mulyani in International Tax Conference in Jakarta in July 2017. Based on the report launched by International Monetary Fund (IMF), tax ratio to GDP of Indonesia is in the percentage of 12%, which is far from average of the other ASEAN countries which 15.4%. The low ratio number depicts the level of compliance of tax payment is low as well, this means the tax payers in Indonesia is still not obedient in paying tax.

The system which used in Indonesia in order to count and pay the tax is self-assessment system, which regulates the tax payers do the counting and reporting the tax on their own. This system very depends on the obedience of the tax payers because the paid tax is considered correct until the government can prove that it is wrong, moreover the optimal surveillance from tax apparatus. That flaw can be used by the tax payers to avoid tax. The most common way used by the company is by claiming “loss” in their financial report, because tax payers are taxed on profit.

Moreover, the situation is worse because of the existence of panama papers which is a document of Mossak Fonseca, a law firm centered in Panama City and has 42 branches in the world; most of them located in tax haven countries that the document was leaked to the public through journalists of press in Germany and the document was provided free of charge to the International Consortium of Investigative Journalists (ICIJ). There are several figures in Indonesia who are registered as Mossack Fonseca clients and more than 2000 names. The incident triggered a tax amnesty program from the government to obtain funds from tax evaders.

The practice of tax avoidance in the company is not immune from the supervision of company managers so that the practice is carried out by an independent board of commissioners and independent board of directors included the corporate governance
component (corporate governance). They are expected to provide a supervisory function related to company activities.

The practice of tax avoidance in the company is not immune from the supervision of company managers so that the practice is carried out legally and does not violate applicable regulations. Supervision of the practice is carried out by an independent board of commissioners and independent board of directors included in the corporate governance component (corporate governance). They are expected to provide a supervisory function related to company activities, one of them is the practice of tax avoidance. However, the party who plays a major role in decision making is the company's board of directors. They hold full power over the management of company operations including corporate tax decisions. One component of corporate governance that can influence a company's tax avoidance action is the gender diversity of the board of directors.

The previous research finds the relationship between gender diversity of board directors and the tax aggressiveness. Boussaidi and Hamed (2015) find that gender diversity has significantly affected the effective tax rate (ETR) in Tunisia; the high ETR value indicates the low level of tax avoidance. The research of Lanis et al. (2015), which discusses about gender diversity and the tax aggressiveness of companies in United States, finds the negative connection between the gender diversity and tax aggressiveness. It shows that varied board directors diminish the level of tax aggressiveness of the company. The similar result is also found in the research of Richardson et al (2016) that spoke about the presence of women in the board directors and tax aggressiveness in Australia.

Gender diversity in the board directors has some impact in corporate governance, especially in making decision. Adams and Ferreira (2009) found the relationship between the presence of woman in board directors to the performance of the company and the corporate governance. They see that board directors that have more gender variation are better supervisors, better boards in making decision, and woman board directors generally are more concerned about ethical problems (Chen et al., 2017).

Based on the explanation above, it can be concluded that there are still many tax evasion practiced by the companies in Indonesia. Referring to the previous research, with the corporate governance component in the form of gender diversity of board directors, it is expected to reduce that practice. This research took a period starting from 2012 because at that time the financial report of public companies in Indonesia started to implement International Financial Reporting Standards (IFRS) until 2017, the last year of provided financial statement when this research was conducted and in order to see latest tax evasion of companies.

LITERATURE REVIEW

In terms of the relationship of gender diversity with the competitive advantage of companies, there are several differences of opinion in the literature. Gender diversity is believed to provide benefits to the companies because women are considered to have "feelings" (Krishnan & Park, 2005). The values and advantages of "feelings" provide harmony, prioritize information disclosure, provide solutions to existing conflicts, and show more democratic leadership (Hurst et al., 1989; Earley & Mosakowski, 2000; Eagly & Johnson, 1990).

The board of directors of women is also assumed to be "strong" because they always experience obstacles in maintaining their position on the board of directors which are generally monopolized by men, and this provides psychological benefits, and good interaction between directors (Pettigrew, 2001). Increased creativity and innovation will be achieved when gender diversity occurs within the board of directors (Campbell & Minguez-Vera, 2008).

Research by Lanis et al. (2015) used the proportion of female board of directors as a proxy for the board's gender diversity variable. The percentage of women is also a proxy for gender diversity in other studies (Boussaidi and Hamed, 2015; Khoula and Ali, 2012; Chen et
al., 2017). Therefore this study also uses the percentage or proportion of women on the board of directors as a measurement of variables.

Previous research on gender diversity of the board of directors conducted by Betz et al. (1989) found that women’s board of directors tended to be risk averse (avoiding risk) compared to the board of directors related to the writing of the company’s financial statements. Peni and Vahämaa (2010) found that companies that have a female Chief Financial Officer (CFO) do financial reporting that is more conservative and risk averse compared to male CFOs. Francis et al. (2014) analyzed the influence of the CFO’s gender on tax aggressiveness. They found that female CFOs had fewer or lower levels of relationship with tax avoidance due to their risk averse nature.

In general, women’s board of directors show more independent thinking than men, which is important in carrying out effective supervision as a task of the board of commissioners (Carter et al., 2003). Daily et al. (2000) found that women gave different views on the board of commissioners and provided more transparency. Women also have a positive influence and increase trust of stakeholder in the board of commissioners (Heminway, 2007). Srinidhi et al. (2011) examined whether companies in United States that have a diverse board of directors (gender) show better quality of earnings. They found that gender diversity on the board of directors will have deeper discussions, look for and find solutions to difficult problems, which are usually "left" by the board of directors is partly or entirely composed of men. They observed that the oversight capacity of the board of directors increased through more detailed board discussions and better communication between the boards, this is due to the presence of women on the board. Gul et al. (2011) conducted research related to companies in the United States. The research analyzed whether gender diversity in the board of directors had an impact on more transparent and specific company stock information. They say that the gender diversity of the board of directors can increase the discussion that occurs on the board of directors and can also increase the ability of the board of directors to conduct transactions with strict supervision, disclosure, and reporting, as well as careful consideration in decision making.

In tax, women are more obedient in financial statement compared to men (Baldry, 1987). Ruegger and King (1992) found that in many problems happened; gender diversity affected the changing attitude related to tax. Fallan (1999) conducted research to find the difference of decision making affected by the level of the person’s knowledge about tax.

The explanation above indicates that woman conducts more strict and efficient supervision like the independent board. Moreover, women also tend to be risk averse, have better moral, ethics, independent thinking, and transparent decision; and decrease the stakeholder’s trust to the board. Hence, the presence of women in the boards of directors is expected to decrease the company’s tax avoidance. Hypothesis that can be formulated in this research is:

H1: The presence of women in boards of directors affects negatively to the tax avoidance.

![Figure 1 – Conceptual Framework](image-url)
METHODS OF RESEARCH

The population in this study were public companies listed on the Indonesia Stock Exchange (IDX) for the period 2012 – 2017. The method of sampling in this study was conducted by purposive sampling with the criteria of (1) non-financial public companies listed on the IDX; (2) firms with negative income; (3) firms that have NOL carry-forwards; (4) firms with ETRs exceeding one and (5) firms with missing data.

The mathematical model used to test the hypotheses developed in this study follows Lanis et al. (2015):

\[
\text{CURRENTETR}_i = \beta_0 + \beta_1\text{WOMEN}_i + \beta_2\text{BOARDIND}_i + \beta_3\text{ACSIZE}_i + \beta_4\text{BIG4}_i + \beta_5\text{BLOCK}_i + \beta_6\text{FSIZE}_i + \beta_7\text{LEV}_i + \beta_8\text{CAPINT}_i + \beta_9\text{INVINT}_i + \beta_{10}\text{ROA}_i + \epsilon_i
\]

The dependent variable of this study is the tax avoidance that is proxied by current ETR (Hanlon & Heitzman, 2010) with the following formula:

\[
\text{Current ETR} = \frac{\text{current income tax expense}}{\text{pre – tax accounting income}}
\]

Independent variable of this study is proxied by the percentage of women in the board of directors composition, while the control variables in this study are:

- Board Independence (BOARDIND). This variable controls the difference in independence on the board of directors and board of commissioners with the presence of independent directors. This variable controls the difference in independence on the board of directors and board of commissioners with the presence of independent directors;
- Audit Committee (ACSIZE). This variable controls the difference in the number of audit committees within a company. The audit committee is described as a monitoring mechanism to improve the monitoring function in internal control, company compliance, and relevant and reliable financial reports. ACSIZE is measured as the number of audit committee members in the company;
- Big 4 Auditor (BIG4). This variable controls the difference in ability and audit quality between big 4 auditors and other auditors (Matsumura & Tucker, 1992). Clients from big 4 auditors should have a lower level of tax aggressiveness. BIG4AUD is measured as a dummy variable, coded 1 if the company uses big auditor services, 0 if it does not;
- Blockheld (BLOCK). This variable controls the difference in shareholding by the shareholders who have at least 5% shares and are not related to management. Shareholders can help to oversee management because they have larger influence on the board of commissioners and management than a shareholder who has less than 5% share (Shleifer & Vishny, 1986). BLOCK is measured as the total proportion of ordinary shares owned by shareholders whose numbers are at least 5%.

\[
\text{BLOCK} = \frac{\text{shares owned by the shareholder}}{\text{number of shares outstanding}}
\]

- Firm Size (SIZE). Company size is a scale in classifying the size of a company. Large companies can achieve economies of scale through tax planning (Rego, 2003). SIZE is measured as a result of the logarithm of total assets;
- Leverage (LEV). Leverage explains the relationship between the uses of funds obtained from debt. Companies that have a lot of debt have low ETR value because interest expense will reduce the tax costs incurred by the company (Noor & Fadzillah, 2010). LEV is measured as total debt divided by total assets;
- Capital Intensity (CAPINT) and Inventory Intensity (INVINT). CAPINT is positively related to tax aggressiveness due to high depreciation rates. CAPINT is measured as
net property, plant, and equipment divided by total assets. INVINT is a substitute for CAPINT, so companies with inventory intensity should not avoid taxes, so INVINT is negatively related to tax aggressiveness (Stickney & McGee, 1982). INVINT is measured as inventory divided by total assets;

- Return on Asset (ROA). ETR measurement is influenced by how the company is able to generate profits, and then ETR is directly proportional to the company's ability to generate profits. The higher ROA will increase ETR, so ROA is positively related to tax aggressiveness (Kim & Zhang, 2016). This variable is measured as pre-tax profit divided by total assets.

RESULT OF STUDY

Based on data from the Indonesia Stock Exchange, a total of 1399 observation from 2012-2017.

| Variable | Mean  | Median | Minimum | Maximum |
|----------|-------|--------|---------|---------|
| CURRENTETR | 0.236 | 0.241  | 0.000   | 0.911   |
| WOMEN    | 0.132 | 0.000  | 0.000   | 0.800   |
| BOARDIND  | 0.273 | 0.273  | 0.000   | 0.667   |
| ACSIZE   | 3.043 | 3.000  | 0.000   | 6.000   |
| BIG4     | 0.412 | 0.000  | 0.000   | 1.000   |
| BLOCK    | 0.700 | 0.719  | 0.000   | 0.994   |
| LEV      | 1.052 | 0.760  | 0.000   | 6.530   |
| ROA      | 0.076 | 0.056  | 0.000   | 0.402   |
| SIZE     | 12.393| 12.400 | 10.678  | 13.965  |
| CAPINT   | 0.305 | 0.268  | 0.000   | 0.906   |
| INVINT   | 0.164 | 0.135  | 0.000   | 0.672   |

Source: Data processed, 2018.

In this study, one independent variable and nine control variables were used to provide information about the results of the interaction between the independent variable and the dependent variable. Based on the descriptive statistics table above, the proxy for aggressive tax is represented through the CURRENTETR variable. In the descriptive statistics above, it can be shown the minimum value of the CURRENTETR variable owned by the sample used in the study of 0. The maximum value is 0.911, and the median value of the variable CURRENTETR is 0.241. The average value of CURRENTETR is 0.236.

Pearson Correlation is used to see the relationship between two variables and measure the strength of the relationship between the two variables. The results of the Pearson correlation test are shown in table 2. The table shows the coefficient value of the relationship between two variables and the level of significance in the variables in the study. Significance levels are marked with a * sign on its coefficient value. According to Pearson Correlation in the table above, the WOMEN variable has a positive and significant relationship with the BLOCK and INVINT variables, while having a negative and significant relationship with the ACSIZE, BIG4, LEV, and SIZE variables.

The OLS regression in table 3 shows the regression results between variable of tax avoidance (CURRENTETR) on the gender diversity of the board of directors (WOMEN) with several control variables. The results of regression above include industry and fixed effects in order to reduce differences in regression results between years and between industries in regression testing. The results in table 4.3 show that the gender diversity of the board of commissioners does not have a significant effect on tax avoidance with a coefficient of 0.025 and a significance value of 0.296 that exceeds the 10% significance level. Furthermore, the control variables BOARDIND, ACSIZE, BIG4, CAPINT have a significant positive effect on tax avoidance, while ROA and SIZE have a significant negative effect on tax avoidance. BLOCK and LEV do not have a significant effect on tax avoidance.
Table 2 – Pearson Correlation

|                      | CURRENTETR | WOMEN | BOARDIND | ACSIZE | BIG4   | BLOCK | LEV   | ROA   | SIZE   | CAPINT | INVINT |
|----------------------|------------|-------|----------|--------|--------|-------|-------|-------|--------|--------|--------|
| CURRENTETR           | 1.000      |       |          |        |        |       |       |       |        |        |        |
| WOMEN                | 0.011      | 1.000 |          |        |        |       |       |       |        |        |        |
| BOARDIND             | 0.073      | 0.017 | 1.000    |        |        |       |       |       |        |        |        |
| ACSIZE               | 0.005      | -0.063| -0.064** | 1.000  |        |       |       |       |        |        |        |
| BIG4                 | 0.080**    | -0.094** | -0.142*** | 0.134*** | 1.000  |        |       |       |        |        |        |
| BLOCK                | 0.049      | 0.068 | -0.037   | -0.086 | 0.085*** | 1.000 |        |       |        |        |        |
| LEV                  | 0.025      | -0.085** | -0.010   | 0.012  | 0.032  | 0.037 | 1.000 |       |        |        |        |
| ROA                  | -0.153     | 0.017 | -0.024   | 0.057  | 0.190  | 0.025 |       | -     | 0.159***| 1.000  |        |
| SIZE                 | -0.101**   | -0.117** | -0.158*** | 0.202** | 0.427  | -     | 0.089 | 0.076*** | 1.000  |        |        |
| CAPINT               | 0.138      | -0.039 | 0.015    | 0.049  | 0.058  | 0.045 | -0.013 |       | -0.075*** | -0.044* | 1.000  |
| INVINT               | 0.060**    | 0.055* | -0.042   | -0.052 | -0.008 | 0.038 | 0.064 | 0.029 |       | -0.131*** | -0.270*** | 1.000  |

Source: Data processed, 2018.

Table 3 – Hypothesis Test Results Effect of Gender Diversity on Tax Avoidance

|                  | WOMEN | BOARDIND | ACSIZE | BIG4 | BLOCK | LEV | ROA | SIZE | CAPINT | INVINT |
|------------------|-------|----------|--------|------|-------|-----|-----|------|--------|--------|
| Coefficient      | 0.025 | 0.170**  | 0.017* | 0.028*** | -0.069 | 0.002 | -0.435*** | -0.017** | 0.030* | 0.023 |
| P                | 0.296 | 0.000    | 0.057  | 0.000 | 0.000 | 0.000 | 0.000 | 0.021 | 0.091   | 0.259  |

Source: Data processed, 2018.

Furthermore, the authors conducted a further regression analysis to see the effect of the gender diversity of the board of directors on tax avoidance in companies listed on the Indonesia stock exchange. The next development in seeing the influence of gender diversity on board of directors is by conducting interaction. The author conducted four interactions, namely: (1) the interaction of gender diversity of the board of directors with an independent board on tax avoidance; (2) the interaction of the gender diversity of the board of directors with the number of audit committees on tax avoidance; (3) the interaction of gender diversity of the board of directors with the big 4 public accounting firm on tax avoidance; (4) the interaction of gender diversity of the board of directors with blockholders on tax avoidance.
Independent boards, audit committees, big 4 auditors, and block holders have a similar role to the company, namely the role of supervision. This interaction will see whether the relationship between gender diversity of the board of directors and tax avoidance is getting stronger or weaker.

Table 4 – Additional Test Results With Board Independence Interaction

|                  | Dependent: CURRENT ETR | OLS     | Robust Regression |
|------------------|------------------------|---------|------------------|
| WOMEN_BOARDIND   | 0.120                  | 0.120   |                  |
| WOMEN            | -0.009                 | -0.009  |                  |
|                  | (-0.12)                | (-0.13) |                  |
| BOARDIND         | 0.154*                 | 0.154*  |                  |
|                  | (2.68)                 | (2.09)  |                  |
| Control Variables| Included               | Included|                  |
| Fixed effects – Industry | Included | Included |                  |
| Fixed effects – Year    | Included               | Included|                  |
| \( r^2 \)        | 0.192                  | 0.192   |                  |
| \( N \)          | 1399                   | 1399    |                  |

Source: Data Processed, 2018.

Table 5 – Additional Test Results With Audit Committee Interaction

|                  | Dependent: CURRENT ETR | OLS     | Robust Regression |
|------------------|------------------------|---------|------------------|
| WOMEN_ACSIZE     | 0.011                  | 0.011   |                  |
| WOMEN            | -0.009                 | -0.009  |                  |
|                  | (-0.06)                | (-0.05) |                  |
| ACSIZE           | 0.016                  | 0.016   |                  |
|                  | (1.50)                 | (1.59)  |                  |
| Control Variables| Included               | Included|                  |
| Fixed effects – Industry | Included | Included |                  |
| Fixed effects - Year    | Included               | Included|                  |
| \( r^2 \)        | 0.203                  | 0.203   |                  |
| \( N \)          | 1399                   | 1399    |                  |

Source: Data Processed, 2018.

Table 6 – Additional Test Results With Big 4 Auditor Interaction

|                  | Dependent: CURRENT ETR | OLS     | Robust Regression |
|------------------|------------------------|---------|------------------|
| WOMEN_BIG4       | -0.048                 | -0.048  |                  |
|                  | (-0.96)                | (-0.96) |                  |
| WOMEN            | 0.038                  | 0.038   |                  |
|                  | (1.39)                 | (1.26)  |                  |
| BIG4             | 0.032*                 | 0.032*  |                  |
|                  | (2.74)                 | (2.51)  |                  |
| Control Variables| Included               | Included|                  |
| Fixed effects – Industry | Included | Included |                  |
| Fixed effects - Year    | Included               | Included|                  |
| \( r^2 \)        | 0.204                  | 0.204   |                  |
| \( N \)          | 1399                   | 1399    |                  |

Source: Data Processed, 2018.

Table 7 – Additional Test Results With Blockholder Interaction

|                  | Dependent: CURRENT ETR | OLS     | Robust Regression |
|------------------|------------------------|---------|------------------|
| WOMEN_BLOCK      | 0.046                  | 0.046   |                  |
|                  | (0.33)                 | (0.33)  |                  |
| WOMEN            | -0.009                 | -0.009  |                  |
|                  | (-0.08)                | (-0.08) |                  |
| BLOCK            | -0.014                 | -0.014  |                  |
|                  | (-0.51)                | (-0.50) |                  |
| Control Variables| Included               | Included|                  |
| Fixed effects – Industry | Included | Included |                  |
| Fixed effects - Year    | Included               | Included|                  |
| \( r^2 \)        | 0.203                  | 0.203   |                  |
| \( N \)          | 1399                   | 1399    |                  |

Source: Data Processed, 2018.
Based on the results of the regression conducted to examine the influence of the gender diversity of the board of directors on tax avoidance, it shows that there is no significant influence on the board's gender diversity on tax avoidance. Even with interaction model shown in table 4 to 7, gender diversity on the board of directors still doesn't have an effect on tax avoidance.

Previous research which says that women have the risk averse nature cannot be proven in this study. The nature of a woman's risk averse as a board of directors should be indicated by a high ETR value because the board of directors who want to avoid risk should not want to do tax avoidance but on the data collected the authors did not say that. This means that it is in line with the theory of liberal feminism that requires that women be totally integrated in all roles, equal to men and do not want any role differences. This theory can mean that women do not always have a risk nature and can also have a risk taker character, according to the data collected by the author where there is a low ETR value even though the proportion of female board of directors is high.

**CONCLUSION**

The main theories used in this study are prospect theory and liberal feminism theory. The conclusion that can be taken from the result of OLS regression and some additional tests are that gender diversity on the board of directors does not affect firm’s tax avoidance. The ETR value of the firms doesn’t affected by the proportion of women in the board of directors, meaning that higher proportion of women doesn’t always has a higher ETR value. Higher ETR value means low of tax avoidance activities.

The limitations of this study are that focuses only on the influence of the gender diversity of the board of directors on tax avoidance by using only one proxy that is current ETR. The suggestions for further research are to use another proxies of tax avoidance, and use another variables that can reduce firm’s tax avoidance.

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THE DETERMINATION OF HEAVY METALS IN WATER FLOWED WITH METAL WASHING WASTE

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ABSTRACT
The water stream in Desa Kejapanan, Pasuruan, East Java, Indonesia used as a source of water for households and field irrigation is indicated to experience heavy metal contamination. The purpose of this study is to determine the type and concentration of metals in the water stream that is contaminated with metal washing waste. The concentration of heavy metals in water and sediments was tested using the Atomic Absorption Spectrophotometer (AAS) method. In this case, the physical and chemical components of the water measured were color, temperature, pH and DO. Meanwhile, the data of heavy metal concentration was tested using ANOVA and was analyzed descriptively. The data were analyzed using SPSS version 16.0 software. The test results point out that the concentration of mercury (Hg) is ranged from 0.028±0.002 mg/L to 0.036±0.005 mg/L while lead (Pb) is in between 0.492±0.009 mg/L and 0.665±0.007 mg/L, cadmium (Cd) in between 0.142±0.011 mg/L and 0.161±0.004 mg/L, zinc (Zn) in between 0.737±0.006 mg/L and 0.763±0.004 mg/L, and copper (Cu) in between 0.318±0.004 mg/L and 0.369±0.002 mg/L. It is known that Zn has the highest concentration of metals compared to other metals while the highest concentration of all types of metals (Hg, Pb, Cd, Zn, and Cu) occurs in the sample S2. The water stream is indicated to have been contaminated by heavy metals (Hg, Pb, Cd, Zn, Cu) because the concentrations of these metals have exceeded the maximum qualification both in water and sediments.

KEY WORDS
Waste, heavy metals, polluted waters.

Aquatic ecosystems are an open ecosystem that is possible to be polluted by heavy metals (Mohiuddin, Ogawa, Zakir, Otomo, & Shikazono, 2011). The heavy metals in the aquatic system come from natural and anthropogenic sources (Lohani et al., 2008) that are generated from domestic and industrial waste disposal (Duruibe, Ogwuegbu, & Egwurugwu, 2007; Nagajyoti et al., 2010) as well as agricultural waste (Risjani et al., 2014). The heavy metals increases due to the entry of wastes from industries and other activities (Liu et al., 2006). In fact, these wastes are found in sediment and water. The sources of elements that pollute the water can be found through the weathering of sedimentary rocks such as limestone, dolomite, shale, and sandstone. The interaction of water with igneous rocks contributes to several main elements such as Fe, Cu, Al, Zn, Mn (Ball and Izbick 2004, Viers et al., 2007, Borrok et al., 2004, Huffmeyer et al., 2009). The elements above are concentrated in mineral deposits which contain sulfides especially those which are related to gold mineralization and iron ore (Nordstrom, 2002). Some minor elements such as Cd, Co, Mn occur in the earth's crust with other minerals (Jarup, 2014). Pb and Hg are sedimented into the aquatic system of atmospheric aerosols that is formed from dust, emissions volcanic, forest, and plant fires (Cempel and Nickel, 2006, Hsu et al., 2010, Kang et al., 2011, Li, 2014).
Heavy metals are harmful substances because it has toxic nature (Duruibe et al., 2007), nondegradable (Ahluwalia & Goyal, 2007), and bioaccumulative (Shi, M, Zhang, Jiang, & Li, 2010). Since heavy metals cannot be degraded, precipitation will occur in water, sediments, and aquatic organisms (Nagajyoti et al., 2010). Heavy metals enter the water stream naturally and become part of the water and sediment suspension through the process of absorption, precipitation, and ion exchange (Liu et al., 2010). The concentration of heavy metals in sediments is much higher than in water. In general, there is a process of sedimentation in river estuary where heavy metals that are hard to dissolve undergo a dilution process in water, drop to the bottom of the water stream, and settle in the sediment (Facetti et al., 1998). Heavy metals in water by natural sources depend on local geology, hydrogeology, and geochemical characteristics of aquifers (Wang et al., 2006).

In Indonesia, the problem of heavy metal pollution is not only generated from the industrial sector but also from agricultural and households sector (Murtini et al., 2003). In general, the heavy metals which can be found in polluted water are mercury (Hg) (Soegianto, 2007), lead (Pb) (Koedrith and Seo, 2011), cadmium (Cd) (De Recherche and Es, 2013), chromium (Cr) (Rodríguez et al., 2016), and copper (Cu) (Asztalos, Italiano, Milano, Maróti, & Trotta, 2010). It is reported that mercury, lead, and cadmium are heavy metals that highly pollute the water in Indonesia (Siregar & Murtini, 2008) that one of which can be seen in Sungai Wangi, Pasuruan (Adam, Maftuch, Kilawati, Tahirah, & Risjani, 2018).

This research is concentrated on analyzing the water in Desa Kejapanan, Pasuruan, East Java that is used as a source of water for household activities and paddy field irrigation. However, the water has flowed with metal washing waste, households waste, and industrial waste that is indicated to be contaminated with heavy metals. Heavy metals such as mercury (Hg), cadmium (Cd), chromium (Cr), lead (Pb), copper (Cu) have high toxicity and will accumulate in the body of the organism (Murty et al. 2011). Because of the important role of water, studies that are related to the content of heavy metal in water are needed. Therefore, the purpose of this study is to determine the type and concentration of metal in the water that is polluted with metal washing waste.

**MATERIALS AND METHODS OF RESEARCH**

There were water and sediment samples taken from four sampling points (S1, S2, S3, and S4) where S1 sampling point was located before the pollutant source and S2 was right at the source of pollution. On the other hand, S3 and S4 sampling points were located after the pollutant source. Water samples were collected by using a BOD Bottle (250 ml) whereas sediment samples were taken using PVC. Then, the samples were inserted into the bottom of the water as deep as 20 cm and stored in containers (Jamabo & Chinda, 2010) until the metal test took place.

Mercury (Hg), cadmium (Cd), lead (Pb), zinc (Zn), and copper (Cu) concentrations in water and sediments were tested by using the Atomic Absorption Spectrophotometer (AAS) method. In this study, the procedure of metal concentration determination refers to EPA (2007). Up to 50 mL of the samples were taken and 5 mL of concentrated HNO₃ was added. Then, it was heated slowly until the volume remained 15-20 mL. After that, 5 mL of HNO₃ was added and heated again followed by adding acid and heated it one more time until the mercury dissolved. The test samples were taken for about 10 mL and then added with KmnO₄ 0.01N and put into a spectrophotometer with a wavelength of 253.6 nm (Hg), 228.8 nm (Cd), 283.3 nm (Pb), 213.9 nm (Zn), and 324.7 nm. The number seen in the spectrophotometer is stated as a metal value.

The water physicals and chemicals measured were color, temperature, pH and DO. In details, the color was observed visually, the temperature was measured by the thermometer, pH was measured using the pH meter, and dissolved oxygen (DO) was measured using DO meter.

The data of heavy metals concentration (Hg, Cd, Pb, Zn, and Cu) in water and sediment was tested by using ANOVA and analyzed descriptively. On the other hand, the statistical analysis was done using SPSS version 16.0 software.
RESULTS AND DISCUSSION

Metal types that are identified in the water flowed with waste. The results of the observations show that there are mercury (Hg), cadmium (Cd), lead (Pb), zinc (Zn), and copper (Cu) in all sampling points because the waste that passes through the water stream coming from household waste as well as agricultural and industrial waste containing organic and inorganic materials and heavy metals. Heavy metals which are mercury (Hg), cadmium (Cd), chromium (Cr), lead (Pb), copper (Cu) have high toxicity and will accumulate in the body of an organism (Murty et al. 2013). The heavy metal contamination such as Pb, As, Cd, Hg, Cr, Ni occurs in various water sources such as soil, surface, tap water etc. Some of those heavy metals are potentially toxic and transferred to the surrounding environment through different pathways (Sankhla et al., 2016).

The main sources of mercury are anthropogenic (Patra & Sharma, 2000) originating from the use of metals in industry, mining, batteries, and mercury lamps. Mercury (Hg) is one of the most toxic heavy metals compared to other heavy metals (Zhang et al., 2017) because it can turn into methyl mercury which is more toxic than other mercury types (Gautam, Sharma, Mahiya, & Chattopadhyaya, 2014). Mercury that accumulates in organisms will disturb the growth and development of the organism (the United States Environmental Protection Agency, 2010) and even able to cause death (Clarkson & Magos, 2006).

Cadmium (Cd) is one of the non-essential heavy metals which has a relatively small amount but can be increased in environments that are contaminated with industrial waste (Pacyna, 2010). Cadmium can be found in phosphate fertilizer as a source of pollutants in water (Jarup, 2014). The main route of Cd is the respiratory and digestive systems (Terry and Stone, 2002).

On the one hand, lead (Pb) is included in the non-technical metal which has toxic nature and is not useful for the organism; tend to be poisonous for the organism (Suhendrayatna, 2001; Yorulmazlar and Gul, 2003). Lead content in water is originated from chemical waste, printing industry waste, paint industry waste, and other industries which produce heavy metals (Sumah and Aunurohim, 2013). Lead (Pb) is a poison for metabolic and enzyme inhibitors (Gebrekidan M., Samuel, 2011) that can damage nervous connections, blood, and brain disorders, as well as hematologic damage (Mohod and Dhote, 2013).

Zinc (Zn) is an essential nutrient for humans and all living creatures. Zinc (Zn) is a cofactor for more than 300 enzymes and is found in all tissues. In humans, the highest concentration of zinc is found in bone, muscle, prostate, liver, and kidneys. A similar distribution has been found in animals that less than 10% of the total zinc in the body is in the blood (EPA, 2005) while the rest is in bone and muscle.

Copper ions usually react with inorganic and organic chemicals in solutions and suspensions which then will form complex to highly complex solutes and sediments containing many natural inorganic and organic water constituents (carbonates, phosphates, and organic substances) (EPA, 2016). Copper (Cu) at low concentration is a micronutrient for organisms and is essential for almost all plants and animals (Kapustka et al. 2004). It is a key atom in protein which acts as a carrier of oxygen (hemocyanin) from several invertebrates. However, Cu can be toxic to some aquatic life at high concentrations. Cu toxicity depends on the organism. In bacteria, fungi, and algae, excess copper interferes cell membrane integrity and causes subsequent leakage of cell content (Borkow and Gabbay 2005).

Metal concentration in water. The test results illustrate that the concentration of mercury (Hg) is ranged from 0.028±0.002 mg/L to 0.036±0.005 mg/L while lead (Pb) is in between 0.492±0.009 mg/L and 0.665±0.007 mg/L, cadmium (Cd) in between 0.142±0.011 mg/L and 0.161±0.004 mg/ L, zinc (Zn) in between 0.737±0.006 mg/L and 0.763±0.004 mg/L, and copper (Cu) in between 0.318±0.004 mg/L and 0.369±0.002 mg/L. The highest concentration of Zn compared to other metals and all metal concentrations (Hg, Pb, Cd, Zn, and Cu) was found in the S2 sample. The concentration of heavy metals at all sample points from highest to lowest consecutively is Zn, Pb, Cu, Cd, and Hg (Figure 1).
Figure 1 – The concentration of metals in water

The S2 sample is a sample taken right at the pollutant source, making it possible to contain the highest metal concentration. The distance of pollutant sources determines the concentration of Hg that is accumulated. The closer the distance, the higher the concentration (Musthofa et al., 2016). Some of the heavy metals that enter the water will be carried by the water stream whereas some will settle in the sediment.

Among other heavy metals, Zn has the highest concentration in the water stream because zinc (Zn) is an essential metal needed by organisms in metabolic processes. Zinc enters the body of the organism through food and water to be used in the process of biotransformation and bioaccumulation (Palar 2008). Meanwhile, mercury (Hg), cadmium (Cd), lead (Pb), and copper (Cu) are known to contain toxic materials (Duruibe, et al., 2007) which have high toxicity and will accumulate in the body of the organism (Murty, et al, 2013).

The maximum threshold of concentration of all metals (Hg, Pb, Cd, Zn and Cu) is recommended by the Government Regulation of the Republic of Indonesia number 82 (2001) as follows Hg 0.002 mg/L, Pb 0.03 mg/L, Cd 0.01 mg/L, Zn 0.05 mg/L, and Cu 0.02 mg/L. From the test results, it is shown that the concentration of all heavy metals (Hg, Pb, Cd, Zn, Cu) along the water stream has exceeded the recommended maximum threshold.

Heavy metals concentration in sediments. The test results show that the concentration of mercury (Hg) in the sediment is ranged from 0.141±0.007 mg/L to 0.268±0.006 mg/L while lead (Pb) is in between 1.380±0.004 mg/L and 1.453±0.005 mg/L, cadmium (Cd) in between 0.559±0.002 mg/L and 0.570±0.003 mg/L, Zn in between 1.782±0.003 mg/L and 1.827±0.006 mg/L, and copper (Cu) in between 1.153±0.004 mg/L and 1.363±0.004 mg/L. The quality standard for heavy metal concentrations in sediments from the International Association of Dredging Companies/the Central Dredging Association (IACD/CEDA) (1997) is 85 mg/L - 1000 mg/L. Heavy metals in sediments are still below the target level so it is assumed not too dangerous for the environment.

The highest heavy metal concentration for Hg, Pb, Cd, Zn, and Cu occurs in sample S2 whereas the lowest concentration for Hg and Cu occurs in sample S3. On the other hand, the lowest concentration of Pb, Cd, and Zn is found on sample S1. In fact, Zn dominates the sediment while Hg is known to be the lowest (Figure 2).

It can be seen that the highest concentration of heavy metals (Hg, Pb, Cd, Zn, Cu) in all samples lies in the S2 sample (Figure 3). The metal concentration on sediment is reported to be higher than in the water. This happens because some of the heavy metals which enter the water stream are carried away by the flow and are accumulated in sediment. Heavy metals such as Pb, Cd, Cu, and Hg can interact with organic substances in the form of a solution which then will be sedimented causing a high concentration in the sediments (Begum et al., 2009b). This will continue to accumulate with the increasing waste in the water
(Begum et al., 2009a). On the other hand, heavy metals in water tend to follow the flow of the water stream and will dilute when a new flow enters so that the concentration decreases.

![Figure 2 – The concentration of metals in sediment](image)

![Figure 3 – The concentration of metals (Hg, Pb, Cd, Zn, Cu) in all sample](image)

All heavy metals at the sampling points indicate a positive correlation between the concentration of heavy metals in water and sediments. In details, mercury (Hg) in water affects mercury in the sediment by 80.4% with the equation $Y = 1.357 + 1.374X$. Whereas, lead (Pb) in water affects the Pb in sediments by 81.7% with the equation $Y = 0.181 + 0.143X$. The concentration of Cd in water affects the concentration of Cd in sediments by 82.1% with the equation $Y = 0.147 + 0.123X$. Then, Zinc (Zn) in water affects Zn in sediments by 81.8% with the equation $Y = 0.331 + 0.586X$. Last but not least, Copper (Cu) in water affects Cu in the sediment by 98.2% with the equation $Y = 0.605 + 1.094X$.

The concentration of heavy metals in water will affect the concentration of heavy metals in the sediment. The increased concentration of heavy metals in sediments is caused by the high concentration of metals which entered the water. Metals that are hard to dissolve will go through a dilution process in the water, drop to the bottom of the water stream, and settle in the sediment (Facetti et al., 1998). Heavy metals in water become part of the water-sediment system that their distribution is controlled by dynamic equilibrium and physics-
chemical interactions influenced by pH, concentration, and type of compound (Singh, Mohan, Singh, & Malik, 2005) (Singh et al., 2005). The metal binding in sediment is caused by the electrochemical attraction between sediment particles and metal particles and the metal binding in organic particles (Meregalli, et al., 2004).

Water quality. The physical and chemical components of the water observed include temperature, acidity (pH), and dissolved oxygen (DO). The measurement of environmental parameters is important because it influences the absorption rate of heavy metals in the water (Darmono, 2000). The results of the measurement imply that the temperature is ranged from 27.3 - 29.7°C while the pH is in between 5.67 - 6.18 and DO in between 4.51 mg/L – 5.37 mg/L. In this case, the water looks muddy.

The results of the water physical and chemical components measurement point out that the temperature is still within the normal range and the pH tends to be acidic to neutral. Besides that, it is known that the DO is still within the recommended maximum value range (RI Government Regulation number 81 of 2001) (0-6 mg/L). The color of the water is light brown to dark brown which indicates that the water stream is muddy because of the many organic particles contained in the water.

Temperature influences the solubility of oxygen in water; when the temperature increases, the oxygen solubility in water will be low (EPA, 2001). The amount of dissolved oxygen (DO) signifies the level of pollution; when the oxygen is high, the level of pollution will be low and vice versa (Mccaffrey, 1995). Dissolved oxygen will decrease if the water is polluted because there is a decomposition process of organic substance that requires oxygen (Ann, 2002).

CONCLUSION

It is concluded that the water stream in Desa Kejapanan, Pasuruan contains mercury (Hg), lead (Pb), cadmium (Cd), zinc (Zn), and copper (Cu) originating from domestic, agricultural, and industrial waste. The waters are indicated to have been contaminated by heavy metals (Hg, Pb, Cd, Zn, Cu) because the concentrations of these metals have exceeded the maximum threshold both in water and in sediments.

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FOOD HABITS OF THE ENDEMIC RICEFISHES (ORYZIAS NIGRIMAS, KOTTELAT 1990) IN POSO LAKE, CENTRAL SULAWESI OF INDONESIA

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ABSTRACT
Lake Poso, one of the ancient lakes of Sulawesi, Indonesia, has several endemic fish species, including the ricefishes (Oryzias nigrimas), local name rono pahit. Populations of Poso Lake endemic species are declining, due to the introduction of alien species, lakeshore development and watershed land-use changes. One way help maintain an O. nigrimas population is through captive breeding and domestication, for which knowledge of food habits is a pre-requisite. The purpose of this research was to study the food habits of O. nigrimas. The research was conducted during April 2018. Samples were collected from three sampling sites: Watudilana in Pamona Urban Village, Tolambo Village and Taipa Village. The Index of Preponderance (IP) and Relative Length of Gut (RLG) were calculated the results show that O. Nigrimas is an omnivorous-herbivorous fish with an average IP range of 57.73 to 70.75 for vegetable matter and 29.25-42.27 for animal food (prey), while the RGL range 2.48 to 3.26. Rhizosolenia sp. (IP 77.84) was the most dominant plant-based diet component, while unidentified Annelida larvae (IP 24.49) were the most common animal food.

KEY WORDS
Oryzias, food habits, index of preponderance, Poso Lakes.

Lake Poso is one of the natural resources that have the potential to produce fish that has long been used by local fishing communities as a source of life and also this lake is rich in endemic species, one of which is Rice fish. Rice fish (Oryzias nigrimas Kottelat), is a type of freshwater fish that only inhabits freshwater, inhabits shallow areas and many aquatic plants (Kottelat, 1990; Miesen, 2016). O. nigrimas is a fish from Adrianichthyidae family, has small finfish, found in fresh and brackish waters from India to Japan and to the Indo-Australian Islands, especially Sulawesi (Parenti et al, 1998). This is probably caused by the reproductive behavior strategy of the fish itself which always attaches the eggs to the surrounding water plants.

Based on community reports and observations in the field it is known that the introduction of foreign fish species to the lake is still rampant whether intentionally or not. According to Parenti (2010), the introduction of foreign fish species that is rampant in tectonic lakes is a serious threat to the presence of freshwater endemic fish, including Rice fish in Lake Poso. In addition, the expansion of settlements and population growth around the lake, the opening of agricultural land and household waste resulted in pressure on the Poso lake ecosystem. If this pressure continues unchecked it can disturb the habitat and the survival of endemic biota in the lake including rice fish (Gundo, 2015).
To prevent the extinction of rice species, an adequate and appropriate management effort is needed for the presence of these fish in relation to the environmental aspects of lake waters and the characteristics of rice fish. Information about rice fish is limited to taxonomy (Kottelat, 1990) and its distribution (Soeroto and Tungka, 1996). Until now, rice fish have not received much attention from researchers and local governments, so there has been no attempt to protect or save these fish. For this reason, it is necessary to study food habits as the purpose of this study.

METHODS OF RESEARCH

The research was conducted during April 2018. Samples were collected from three sampling sites: Watudilana in Pamona Urban Vilage, Tolambo Village and Taipa Village. Data taken by sampling at the study site, obtained Rice fish were analyzed in the laboratory for study of eating habits.

The tools used in this study include: bottled fial, buckets, camera, dissecting sets, fishnets, microscope, paper labels, petri disk, plastic bags, a pipette, a ruler, tissue, and an analytical balance and weight per gr. While the materials needed are formalin 4%, water, and samples O. nigrimas which is derived from water of Poso Lake.

Fish sampling using purposive sampling method use a lift net. Fish numbered, measured the total length, body weight is weighed, then dissected to download the contents in the intestines and cleaned with water, put in a bottle containing 4% formalin. Intestine extracted the contents of feed. Food contents are separated according to its kind, and one each in the measuring volume, and then identified.

Measuring the relative length of gut is one method used to distinguish fish based on the type of food. According to Zuliani et al. (2016), Relative Length of Gut/RLG can be calculated using the following formula:

$$ \text{RLG} = \frac{\text{GL (cm)}}{\text{TL (cm)}} $$

Where:
- RGL = Relative Lenght of Gut
- GL = Gut Length (cm)
- TL = Total Length (cm)

Eating habits are analyzed based on the Index of Preponderance (IP) proposed by Natarjan and Jhingran in Effendi (1979) in the form of the following formula:

$$ \text{IP} = \frac{\text{Vi x Oi}}{\sum \text{Vi x Oi}} \times 100\% $$

Where:
- IP = Index of Preponderance
- Vi = Percentage of volume of one type of food
- Oi = Percentage of frequency of occurrence of one type of food
- $\sum \text{Vi x Oi}$ = VixOi number of all types of food.

RESULTS AND DISCUSSION

Total fish being observed was 109 fish which consisted of 42 fish from station one, 31 fish from station two and 36 fish from station three. Out of 26 fish selected based on random sampling method, 8 fish had empty stomachs. There are two reasons why these fish have empty stomach; the fish had not eaten anything before they were caught or they had digested their entire food (Fariedah, 2017). Average length of fish intestine was the indicator of fish eating habit. Table 2 showed average length of O.nigrimas fish intestine observed in this study.

Fish eating habit can be predicted based on RLG score. When RLG is between 2.48 and 3.26, the O. nigrimas fish is categorized as Omnivore-Herbivore fish. Lagler et al. (1977) stated that digestive track of herbivore fish is longer, even 5 times longer than its body. Digestive track of omnivore fish is slightly longer than its body while that of carnivore fish is shorter than its body. Zuliani et al. (2016) noted that average intestine of carnivore fish is <1
centimeter, that of omnivore fish is between 1 and 3 centimeters and that of herbivore fish is >3 fish. As an addition, Yulianto et al. (2018) explained that length of fish intestine is closely related to length of its body, which means that fish with longer intestine requires more and larger food and also wider area to search for food.

| Station | Length of Fish (Cm) | Length of Fish Intestine (Cm) | RGL |
|---------|---------------------|-------------------------------|-----|
| A1      | 6.4                 | 20.9                          | 3.26|
| A2      | 7.2                 | 19.6                          | 2.72|
| B1      | 5.5                 | 17.2                          | 3.13|
| B2      | 6.1                 | 15.1                          | 2.48|
| C1      | 5.8                 | 18.3                          | 3.16|
| C2      | 6.3                 | 20.4                          | 3.24|

There are different types of food based on the sampling place as a comparison between the three stations. Of the 18 fish hulls analyzed, it can be seen that the *O. nigrimas* fish food is in the form of phytoplankton (7 types) and zooplankton (8 species) (Figure 1). The results of this analysis indicate that the variety of food *O. nigrimas* is quite a lot. Based on food habits, *O. nigrimas* includes omnivorous fish.

Whereas based on the calculation of Index of Preponderance of *O. nigrimas* fish in Lake Poso waters, it can be seen in Figure 2. Based on the results of the calculation of Index of Preponderance, the main foods are Leptocylindricus sp and Rhizosolenia sp, supplementary foods are Biddulphia sp, Coscinodiscus sp, Unidentified larvae Annelida, unidentified shrimp larvae, and supplementary foods are Daphnia sp, Unidentified Gastropoda larvae, Synedra sp. This food grouping refers to Nikolsky (1963) that the main food group for fish is IP greater than 25%, supplementary feed if 5% ≤IP≤25% and additional feed if IP is less than 5%.

Based on the research of Gani et al (2015), in Lake Lindu that the main food of *O. sarasinorum* is *Melosira sp* (Phytoplankton) with a type of food source that is lacking (oligotrophic), but the result of gastric *O. nigrimas* analysis in Lake Poso shows that the main food is *Leptocylindricus sp* and *Rhizosolenia sp* (Phytoplankton). The difference in these main foods is in accordance with Effendie’s (2002) statement, that in a large geographical area, for one type of fish that lives separately there can be differences in food, not for one size but all types of sizes. So different types of food are normal.
Figure 2 – Index of Preponderance *O. nigrimas* in Lake Poso
Table 2 – Availability of food in the waters of Lake Poso

| Species                  | Station (Abundance/L) |
|--------------------------|-----------------------|
|                          | A1 | A2 | B1 | B2 | C1 | C2 |
| **Fitoplankton**         |    |    |    |    |    |    |
| Coscinodiscus sp         | 2360 | 5160 | 0  | 0  | 5220 | 0  |
| Bacteriastum sp          | 1160 | 1260 | 0  | 0  | 1080 | 1380 |
| Biddulphia sp            | 1620 | 0    | 1440 | 2700 | 1080 | 0  |
| Leptocylindrica sp       | 1440 | 2160 | 1620 | 3420 | 4320 | 4500 |
| Rhizosolenia sp          | 0    | 1620 | 720  | 1080 | 0    | 0  |
| Cyclotella sp            | 1440 | 2160 | 1620 | 3420 | 4320 | 4500 |
| Synedra sp               | 0    | 1080 | 0    | 0    | 0    | 0  |
| Isochrysis sp            | 0    | 1080 | 0    | 0    | 0    | 0  |
| Total (N)                | 6580 | 11280 | 4320 | 8820 | 12780 | 8220 |
| **Zooplankton**          |    |    |    |    |    |    |
| Microsetella sp          | 720 | 660 | 900 | 540 | 720 | 1080 |
| Unidentified Larva Annelida 1 | 360 | 280 | 320 | 540 | 540 | 420 |
| Unidentified Larva Annelida 2 | 0 | 180 | 0 | 0 | 0 | 360 |
| Unidentified Larva Gastropoda | 180 | 240 | 300 | 360 | 420 | 480 |
| Daphnia sp               | 360 | 0    | 0    | 0    | 0    | 0  |
| Unidentified Larva Bivalvia | 0 | 540 | 660 | 720 | 840 | 0  |
| Platysas sp1             | 0    | 0    | 0    | 0    | 0    | 240 |
| Platysas sp2             | 0    | 0    | 0    | 0    | 0    | 180 |
| Hillodunella sp          | 0    | 0    | 0    | 0    | 0    | 360 |
| Temora sp                | 540 | 360 | 420 | 540 | 660 | 720 |
| Total (N)                | 2160 | 2260 | 2600 | 2700 | 3180 | 3840 |

The uniqueness of *O. nigrimas* is also because it is an *Omnivorous* (although it is more likely to be herbivores) because based on the results of the analysis of gastric contents which shows the types of phytoplankton foods ranging from 56% - 72% (Figure 2). It seems that *O. nigrimas* adapts to the availability of food in the waters of Lake Poso (Table 2).

**CONCLUSION**

The Index of Preponderance (IP) and Relative Length of Gut (RLG) were calculated, the results show that *O. Nigrimas* is an omnivorous-herbivorous fish with an average IP range of 57.73 to 70.75 for vegetable matter and 29.25-42.27 for animal food (prey), while the RLG range 2.48 to 3.26. *Rhizosolenia* sp. (IP 77.84) was the most dominant plant-based diet component, while unidentified Annelida larvae (IP 24.49) were the most common animal food.

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THE ROLE OF GENDER IN MODERATING THE EFFECT OF COMPETENCE, INDEPENDENCE, AND ETHICS TOWARD AUDIT QUALITY: A CASE STUDY ON FINANCE AND DEVELOPMENT SUPERVISION BODY OF EAST JAVA REPRESENTATIVE

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ABSTRACT
This research aimed to obtain empirical evidences of competence, independence, ethical effects toward audit quality and testing the role of gender in moderating competence, independence, ethical effects on Finance and Development Supervision Body (BPKP) auditor of East Java Representative. Research population comprised of 163 East Java Representative BPKP auditors. Samples in this research were 163 East Java Representative BPKP auditors. The result of this research showed that competence do not affecting toward audit quality, independence do not affecting toward audit quality, ethics had positive effect toward audit quality, gender do not moderating the effect of competence, independency, and ethics toward audit quality.

KEY WORDS
Compeence, independence, ethics, gender, audit quality.

Currently, good governance is new developed paradigm in Indonesia. Government faces challenges from society concerning public trust toward non-optimal governance and public service systems. Good governance implementation should be easier to perceive when public service sector keep making improvement and development. Society demand government to apply clean, fair, transparent, and accountable governance and making improvement by applying clean governance and good governance.

Mardiasmo (2002) stated that there are two kinds of government auditor namely internal auditor and external auditor. Internal auditor is inspection unit that the part of constitutes in organization which being supervised. Internal auditor comprises of Department Inspectorate General, Intern Supervisory Unit (SPI) within State Agency and State-Owned Enterprises (BUMN) / Regional-Owned Enterprises (BUMD), Provincial Regional Inspectorate (Itwilprop), Regency / Municipal Regional Inspectorate (Itwilkab / Itwilkt), Finance and Development Supervision Body (BPKP). External auditor is unit of inspection outside organization which being examined, in this term The Audit Board in the Republic of Indonesia (BPK RI) which is independent external audit institution.

BPKP is government internal supervision apparatus which directly responsible toward President that conduct intern supervision toward state financial accountability that comprised of cross-sector activity, State general treasury and assignment from President (Government Regulation Number 60 year 2008). BPKP in conducting that activity divided into four groups namely audit; consultation; assistance and evaluation: eradicating corruption, nepotism; education and training of supervision.

Several cases involving BPKP auditor among of them were BPKP auditor case that abusing of authority, task, and position by receiving bribery, that issue caused the result of review accuracy were doubted.

De Angelo (1981) stated that audit quality was defined as auditor ability in detecting mistakes in financial statement and reports them toward financial statement user. Auditor ability in detecting material mistakes related with auditor competence meanwhile auditor ability to report mistakes found related with auditor independence.

The quality of auditor’s job result also highly affected by auditor individual characteristics. Gender could be interpreted as differentiator role a male and female didn’t
only viewed from biological or sexual difference but also including socio-cultural values. Gender is one of non technical factors influencing audit quality.

Government Intern Audit Standard (2014), defined competence as ability and characteristic auditor should have in form of necessary knowledge, skill, and behavior attitude in audit task implementation. Male auditor tend to have passion to increase their competence through sustainable training and education, due to male tend to be ambitious, aggressive, active, and brave in facing challenges and eager to take risk in job. Meanwhile woman perceived to be more passive, softer, and avoid conflict at work (Eagly, 1987).

Indonesian Government Internal Audit Standard (2014), described independence as auditor independence in condition threatening intern audit activity ability or intern audit process implementation, that auditor could perform their intern audit responsibility objectively. Gill Palmer et al. (1987) stated that male tend to be more oriented in job, objective, independent, aggressive, and generally have more ability compared to woman in managerial responsibility. Female tend to be perceived as passive, soft, and oriented in consideration and to be more sensitive.

Government Internal Auditor expected to be able to defend ethics profession which stipulated by Indonesian Government Internal Auditor Association (AAIPI) for doing well enough government internal auditor profession that support institution or organization being supervised to realize good governance. James (1989) stated that female auditor tends to comply with stipulated ethics and regulation and more consider before making decision.

Researcher selected East Java Representative BPKP as object in this research was outlined in Detikcom (2018) that East Java Province is a province with the most corruption cases during 2018. East Java Representative BPKP auditor suspected to falsify BPKP audit result related to three commissioners of East Java Election Supervision Board (Bawaslu). They expected BPKP auditor to act in professional and independent, and didn’t easily intervened by investigator or others. (Detikcom, 2016).

This research has primary motivation to re-testing whether auditor gender, independence, competence, ethic could affect auditor in performing audit process that affecting audit quality released. Several researches showed that gender affect toward audit quality but several research said that gender not affected toward audit quality.

Research about gender issue within gender and finance has been frequently conducted. But some research only limited on assessing various female and male accounting dimension that already jobbed in institution. Examined dimension previously amongst them are performances, perceptions, ethics, commitments, professionals, turnover, salary, job satisfaction discrimination (Narsa, 2006).

**LITERATURE REVIEW**

*Theory of Planned Behavior.* Theory of planned behavior comprised of three matters, belief on result and evaluation possibility of such behavior (behavioral beliefs), belief on expected norm and motivation to fulfill such expectation (normative beliefs), and belief of factors that could supporting or obstructing behavior and awareness of such factor strengths (control beliefs). Behavior belief, seems on auditor behavior that describe complete belief on conducted behavior that auditor could didn’t be affected with anything or anyone. Normative belief, could be applied in audit examination wholeheartedly and disclose any audit findings found with competence that auditor possess. Control belief, could applied on auditor ethic which demonstrated by how strong auditor could retain their ethic principal in collecting audit evidences to obtain quality audit result.

*Contingency Theory.* Contingency theory described that control system between one organization with another organization shouldn’t always similar, or even certainly different, as its design reference and implementation that depend on organization concept, strategy and goal to be able to generate affective management controlling system (Istanti, 2013). Katzell (1962) describes five kinds of situational parameters that comprised of the respective organization size, organizational member interaction and interdependence level, organizational members personality, disparity level between organizational goal and such
organizational member goal. Researcher used gender variable in this research as moderation variable to describe whether gender could strengthen or even weaken auditor competence, interdependence, ethic toward audit quality of East Java Representative BPKP.

Audit Quality. De Angelo (1981) described audit quality as auditor ability in detecting mistakes in financial statement and report them to financial statement user. Audit quality measurement in this research adopted research instrument carried out by Carcello et al. (1992). Carcello et al. (1992) conducted research concerning audit quality attributes and mentioned four factors affecting audit quality, specifically audit office experience with client, understanding client industry, responsive toward client needs and compliance on audit standard.

Internal Audit. Institute of Internal Auditor (IIA) stated that internal audit is independent activity, objective belief, and consultation designed to add value and increase organizational operational. This internal audit supports organization to obtain its objective by conducting systematic and discipline approach to evaluate and increase risk management, control and governance process effectiveness.

Competence. Government Internal Audit Standard (2014), defined competence as ability and characteristic auditor should possess in form of necessary knowledge, skill and behavior attitude in audit tasks implementation. Auditor should have education, knowledge, expertise, and skill, experience as well as other competence required to effectively conduct audit task. Auditor competence is necessary to make good audit performance and internal audit assignment could be carried out according to auditee situation and condition.

Independence. Independence is primary key for public accountant profession. It is an absolute for auditor to possess when conducting auditing task where auditor must provide attestation for auditee’s financial statement qualification. Indonesian Government Internal Audit Standard (2014) described independence as auditor independency from internal audit activity ability or internal audit process implementation threatening condition, that auditor could conduct internal audit responsibility objectively. Credibility is necessary for auditor in conducting audit process to improve audit result credibility.

Ethics. Ethic commonly defined as behavior or rule values accepted and used by certain group or individual. Governmental Intern Auditor are expected to hold firm profession ethics stipulated by Indonesian Government Internal Auditor Association (AAIPI) to perform government internal auditor profession task in good manner to support the supervised institution or organization to realize good governance. Ethic concerning accountant profession is frequently become interesting issue. This is related to several ethic violations conducted by accountant.

Gender. Fakih (1999) defined gender as grammatical category used to classify from other sentences and words, in which summary related to existence and inexistence from to sex; male and female. Gill Pallmer et al. (1997) classified perspective concerning gender into: Equity Model in which this model assumes that male and female as professional are identical, that similar way is necessary in managing, and female should be given similar and complementary access. Sex Role Stereotypes Model which assumes that male and female have different desire that difference exist in terms of managing such desires. Gender socialization theory described those gender differences in which male and female have different characteristic, and such different shall affect individual behavior (Damai, 2017).

Previous Research. Suzan & Jomana (2013) showed that there were no relationship between audit fee and audit gender, but there were other influencing factors amongst them audit quality and audit competence. Ed & Eric (2001) showed that female auditor were more efficient in processing information compared to male auditor and female auditor tend to require less time to complete tasks compared to male auditor and supported hypothesis that gender and task complexity effected toward task efficiency. Diane & Joel (2009) showed that female auditor found more misstatement potential compared to male auditor, and female auditor tend to avoid risks compared to male auditor. Eko (2012) showed that independence, experience and accountability were simultaneously affected toward audit quality, independence and accountability were partially affected toward audit quality, and accountability was the most dominant factor influencing audit quality. Achmad (2012) showed...
that job experience, independence, objectivity didn’t affect public sector audit. Integrity and competence affected public sector audit quality. Venny & Wirawan (2013) showed that there were no differences in terms of male as well as female auditor competence and independence at Surabaya Public Accountant Office. Rendra (2015) showed that there were Job Stress positive effect toward Turnover Intention, there were Salary Satisfaction negative effect toward Turnover Intention, there were no effect between Job Stress toward Turnover Intention when Gender served as moderator, there were didn’t Salary Satisfaction effect toward Turnover Intention when Gender served as moderator, there were effect between Job Stress and Salary Satisfaction with Turnover Intention simultaneously. Erna & Natalia (2013) showed that gender didn’t affect toward audit judgment meanwhile audit experience.

**Hypothesis.** Previous research result showed that competence affect toward audit quality generated, the higher competence possessed by an auditor shall affect audit quality result generated (Achmad, 2012). Previous research result also revealed that competence don’t effect toward audit quality generated (Murhaban, 2014).

H1: Competence has positively affects toward audit quality.

Previous research result showed that independence affect toward audit quality generated, the higher auditor independence shall affect audit quality generated (Eko, 2012; Achmad, 2012; Wiliam & Ketut, 2015; Iman & Soekrisno, 2014).

The following is hypothesis formulation in this research:

H2: Independence has positively affects toward audit quality.

Previous research result showed that ethic affect toward audit quality, if auditor maintain ethics in performing audit task, it shall affect audit quality result (Suzan & Joanna, 2013; Ahsan, 2017). Hypothesis in this research formulated as follow:

H3: Ethic effect has positively affects toward audit quality.

Male auditor also tend to have passion to increase their competence by following sustainable training and education, as they tend to be ambitious, aggressive, active, and eager in facing challenges and eager to take risk at job. Female auditor on the other side more passive, soft, and avoid conflict they shall face at job (Eagly, 1987).

H4: Gender moderating the effect of competence toward audit quality.

Gill Palmer et al. (1997) stated that male are more oriented at job, objective, independent, aggressive, and commonly have more ability than female in managerial responsibility. Female tend to be passive, soft, and consideration-oriented and tend to be sensitive.

Eleanor Dart (2011) in research concerning auditor independence revealed that there were no independence perception differences between male and female auditor. Venny and Wirawan (2013) in research concerning auditor independence revealed that there were no differences between male and female auditor at East Java Public Accountant Office

H5: Gender moderating the effect of independence toward audit quality.

Female auditor tend to maintain ethics in audit process compared to male auditor, they tend obey ethic and regulation which spilitated and make more considerations prior to making decision and tend to have characteristic of avoiding consequences arises from audit process conducted (James, 1989).

H6: Gender moderating the effect of ethics toward audit quality.

**METHODS OF RESEARCH**

The Research Location. This research location selected in finance and development supervision body (BPKP) of east java representative

Sampling Technique. Population in this research were entire East Java Provincial Representative BPKP auditor functional official with 163 respondents in total. Samples in this research were entire population members. Saturated sampling technique used in this research as sampling method. Respondents characteristic selected to complete questionnaire were 163 auditor functional officials.
**Method of Data Collection.** This research used primary data source in form of questionnaire to complete by auditor of finance and development supervision body (BPKP) in East Java Representative.

**Method of Data Analysis.** This research used data analysis method using 3.0 PLS version of smartPLS (Partial Least Square). Partial Least Square is structural equation analysis or variant-based Structural Equation Model (SEM) that could simultaneously perform measurement model and structural model testing at once. Partial Least Square (PLS) model is a powerful factor inter-determinacy analysis method which didn’t assuming data with certain variable size scale measurement and could be performed with small sample. PLS could also be used for theory confirmation. In terms of structural equation model to test theory with intention of prediction, PLS is more appropriate approach. One of the advantage is that sample size being should are didn’t required to be compared with SPSS analysis method that requires 30 samples and data must didn’t be in multivariate normal distributor (indicator with category, ordinal, interval through ratio scale that could be used in same model).

Analysis tool used to test hypothesis in this research was moderated regression analysis (MRA). This analysis aimed to discover competence, independence, and ethic effects toward audit quality, as well as to discover gender role in moderating competence, independence, and ethic effects toward audit quality.

The following are regression equation used in this research:

- Model 1: \( AQ = a_1 + b_1C + b_2I + b_3E + e_1; \)
- Model 2: \( AQ = a_2 + b_4C + b_5I + b_6E + b_7G + e_2; \)
- Model 3: \( AQ = a_3 + b_8C + b_9I + b_{10}E + b_{11}G + b_{12}C^*G + b_{13}I^*G + b_{14}E^*G + e_3. \)

Where: \( C \) – competence; \( I \) – independence; \( E \) – ethic; \( AQ \) - audit quality; \( G \) – gender; \( e \) – error.

**Bias Non-Response Test (T-Test).** Bias non response test carried out with independent sample t-test by comparing respondent response average prior to cut off date with respondent response average after cutoff date. If respondent response average prior to cut off date do didn’t statistically different with respondent response average after cut off date, then data provided by respondent either prior to or as well as after cut off date could be entirely processed as research hypothesis verification.

First stage carried out on November 22nd, 2018 and expected to be received until December 26th, 2018. First stage questionnaire return received on December 17th, 2018 with total of 38 questionnaires meanwhile 22 questionnaires returned on second stage that received on December 26th, 2018. From 163 questionnaires provided into 163 auditors of East Java Representative BPKP, 60 questionnaires (36.8%) were returned back and the remaining 103 questionnaires (63.2%) were not returned back.

**RESULTS AND DISCUSSION**

**Bias Non Response Test.** Respondents in this research were East Java Provincial Representative BPKP auditor. 60 out of 163 questionnaires distributed by researcher were completely filled by respondents. Valid or processed questionnaire showed that entire completed questionnaire were 60 questionnaires or 100% in total.

| Variable | Stage | N   | Mean     | Standard Deviation | p   |
|----------|-------|-----|----------|--------------------|-----|
| KA       | Stage 1 | 38  | 36.1579  | 7.70323            | 0.009 |
|          | Stage 2 | 22  | 38.1364  | 1.61459            |      |
| K        | Stage 1 | 38  | 21.3421  | 2.18442            | 0.009 |
|          | Stage 2 | 22  | 21.2727  | 1.12045            |      |
| I        | Stage 1 | 38  | 36.8947  | 4.22854            | 0.020 |
|          | Stage 2 | 22  | 38.8636  | 1.55212            |      |
| E        | Stage 1 | 28  | 36.0789  | 6.71175            | 0.009 |
|          | Stage 2 | 22  | 38.1364  | 1.20694            |      |

*Source: Data processing (2018).*
Bias non-response testing carried out with T-test, due to normal distribution data and few total samples. Decision making basis if \( p > 0.05 \) is significant (Imam Ghozali, 2005). Testing result of this research probability significance level greater than 0.05, which means respondents response provided by two sample groups contain no response difference, that data used in this research could describe research conclusion.

**RESULTS OF STUDY**

This research has six testing hypothesis. The following are the respective testing result.

| n/n | Model 1 | Model 2 | Model 3 |
|-----|---------|---------|---------|
| K   | 0.522** | 0.510** | 0.474** |
| I   | 0.090** | 0.059** | 0.032** |
| E   | 0.000** | 0.000** | 0.000** |
| G   | 0.980   | 0.986   | 0.973   |
| K*G | -       | 0.258** | 0.312** |
| I*G | -       | -       | 0.143** |
| E*G | -       | -       | 0.763** |
| Adj. R^2 | 0.851 | 0.845 | 0.866 |

Note: \( p_{value} < 0.05, t_{statistic} > 1.96 \). Source: Data processing, 2018.

From the result of data processing with Smart PLS 3.0, the research hypothesis was obtained as follows:

Hypothesis 1 (One) stated that competence has positive effect and significantly toward audit quality. Research result using statistical testing showed that competence variable didn’t significantly affect toward audit quality, therefore H1 is rejected. It could be observed from \( p_{value} > 0.05 \), specifically 0.522. It means that hypothesis 1 (one) stating that competence has positively affected toward audit quality is didn’t proven (rejected). Based on this result it could be concluded that competence wasn’t one of the factor determining audit quality at East Java Provincial Representative BPKP.

This research result concurs with research conducted by Dewa & I Ketut (2015) research stating that competence didn’t affect toward audit quality generated. This suggests that the higher auditor competence level didn’t guarantee that audit quality generated shall be better. This result also suggest that supervision is necessary to avoid mistakes and non-optimal decision making in performing audit process that effect audit quality generated. This result not concurs with research conducted by Achmad (2012) and Duff (2004) which competence was one factor that influence the audit quality.

Hypothesis 2 stated that independence has positive effect toward audit quality. It could be observed from \( p_{value} > 0.05 \) value, specifically 0.090. It means that hypothesis 2 (two) stating independency didn’t affect toward audit quality was rejected, it means H2 is rejected. Therefore it could be concluded that independence didn’t one of factor determining auditor audit quality at East Java Provincial Representative BPKP.

This research result concurs with research conducted by by Eko (2012) stating that independence partially affects toward audit quality. Audit quality is merely affected by auditor independence but auditor competence. Independence is necessary in audit process as the more independent the auditor, audit quality generated shall increase. This result also concurs with research conducted by Achmad (2012) stating independence didn’t affect toward examination quality result.
Hypothesis 3 (Three) stated that ethic has positive effect toward audit quality. H3 is accepted as p value was 0.000 or \( p_{\text{value}} < 0.05 \) which means significant, in level 5%. Therefore it could be concluded that ethic was one of factor determining auditor audit quality at East Java Provincial Representative BPKP.

This research result concurs with research conducted by Suzan & Joanna (2013); Ahsan (2017); Amos et al. (2017) showing that ethics affect toward audit quality. If auditor maintains ethics in performing audit task, it shall affect audit quality result.

Hypothesis 4 (four) stated that gender moderating the effect of competence toward audit quality. It could be observed from p value 0.332 > 0.05 and significantly proven at level 5% toward audit quality. Therefore hypothesis 4 (four) stating that gender moderating the affect of competence toward audit quality is didn’t proven, which means H4 is rejected. Based on this research it could be concluded that gender didn’t moderating the affect of auditor competence in determining auditor audit quality at East Java Provincial Representative BPKP.

This research result concurs with research conducted by Eaghly (1987) stating that male auditor tend to have better competence than female auditor. Male as well as female auditor equivalently has experience and knowledge concerning audit issue or finding, and equivalently has passion to improve their competence through training.

Hypothesis 5 (five) stated that gender moderating the effect of independence toward audit quality. Based on \( p_{\text{value}} \) 0.143 (higher than 0.05) and significant level at 5% toward audit quality, H5 is therefore rejected. It could be concluded that gender didn’t moderate the affect of auditor independence in determining auditor audit quality at East Java Provincial Representative BPKP.

This research result showed that gender didn’t moderating the effect of independence toward audit quality. It means that male and female auditor has equivalent independence level or has no difference in performing audit to generate quality audit. This research result don’t concurs with research conducted by Gill Palmer et al. 1987) stating that male auditor tend to be more independent than female auditor in performing audit task.

Hypothesis 6 (six) stated that gender moderate the effect of ethics toward audit quality. Based on \( p_{\text{value}} \) 0.763 (higher than 0.05) and significant level at 5% toward audit quality, H6 is therefore rejected. It could be concluded that gender didn’t moderating the effect of auditor ethics in determining auditor audit quality at East Java Provincial Representative BPKP.

This research result showed that gender didn’t moderating the effect of ethic toward audit quality. It evidences that male and female auditor sought to obey and solve ethical issues in performing audit process. This research result don’t concurs with research conducted by James (1989) stating that female auditor tend more obeying and notice to ethical issues in performing duty compared to male auditor.

**CONCLUSION AND SUGGESTIONS**

Based on above described research discussion, then it could be concluded that competence and independence don’t affect toward audit quality, ethic has positive effect toward audit quality, gender don’t moderating the effect of competence toward audit quality, gender didn’t moderating the effect of independence toward audit quality, and gender didn’t moderating the effect of ethic toward audit quality.

Based on this research result BPKP is expected to organize training to improve BPKP auditor competence to improve audit quality generated, BPKP auditor are expected to conduct period supervision toward audit process and examination result report performed by auditors that issued examination result could create good governance, and BPKP is expected to be able to uphold independence and performing audit process according to stipulated ethics code.

Limitation that researcher encountered during this research because this research was limited to discover auditor perception, and this research conducted during end year period (November - December 2018) that auditor had many duties to perform and many auditor assigned for out of town duty that questionnaire filling depended on auditor situation and
time. According to above research limitation, the expectation for subsequent research could examine audit quality from the other aspects besides auditor competence, independence, ethics and gender, for instance auditor personality type, integrity, objectivity, professionalism, professional commitment, job stress, and the others.

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INFLUENCE OF SPECIALIZATION, SIZE AND TENURE OF AUDIT FIRM ON EARNING MANAGEMENT OF MANUFACTURING COMPANIES LISTED ON BEI DURING 2014-2016

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ABSTRACT
This research was conducted to determine the effect of audit quality tested with three variables, namely Audit Firm Specialization, Audit Firm Size, and Audit Firm Tenure on earning management. The population taken in this study was manufacturing companies listed on the Indonesia Stock Exchange for the 2014-2016, and samples taken based on several criteria, namely: (a) listed companies during the observation period, (b) companies not IPO during the observation period, (c) the company is not delisted in the observation period, etc. From these criteria, 202 sample companies will be tested using the SPSS technique. The results obtained from this study were (1) Audit Firm Specialization influence on earning management was rejected (2) Audit Firm size had an influence earning management was rejected, and (3) Audit Firm tenure had an influence on earning management was rejected.

KEY WORDS
Audit firm specialization, audit firm size, audit firm tenure, earning management.

Company management has responsibility on operational and non-operational activity result reporting through financial statement toward shareholders. Company management performance reflected on profit outlined in financial statement, therefore profit information is crucial information as investment decision making basis that interest difference might occur between management and financial statement user due to provided information discrepancy. This profit information frequently becomes management opportunistic falsification action target to maximize their interest, that it could harm investors. Behavior of regulating company profit according to management desire is known as earning management.

Earning management considered as negative issue for several parties as management generally present profit reflected on financial report that is not congruence with actual condition. Earning management incur as agency issue impact namely interest inconsistency between manager and company owner due to information asymmetry, imbalance condition in information attainment between management and shareholders where management have more information than external parties. In other words earning management practice are profit reporting practice that reflect management desire instead of company desire (Levitt A. Jr., 1998), that this policy frequently considered as opportunistic action, in which management act on their own interest (Wibisono Haris, 2004) and eventually competent and independent third party roles required to conduct examination on financial report to recover financial report user trust as its target is generating more trusted and accurate financial report according to prevailing accounting regulation (Al-Thuneibat, Al Issa, & Baker, 2011).

Public accountant are the most precise profession as third party as they take role as auditor to conduct “trust allotment” function through financial report audit. Audit on financial report intended to lower information risk and improve decision making process (Arens, Elder, & Beasley, 2008). Audit process designed to determine whether figures reported in financial report present correct company operational result and financial position with fair methods (Al-Thuneibat et al., 2011).

According to DeAngelo (1981) judgment basis for incentive allocation could be made as accountant office, where large public accountant office would certainly sought to present better audit quality compared to small public accountant office. Meanwhile according to
Arnett and Danos (1979) Audit Firm (Public Accounting Firm) size could not be made as basis of certain work succeed, as long as its professional standard and qualification maintained then it would not be ethical to compare Audit Firm Big Four and non-Audit Firm Big Four.

According to Johnson, Khurana, and Reynolds (2002) research generated showed insufficient understanding on client at initial assignment could lower auditor ability in detecting material error, and lower audit quality. Therefore, long enough service period and experience of accountant could increase auditor ability in detecting misstatement within financial report. However in Indonesia auditor assignment period has been currently regulated in Government Regulation Number 20 Year 2015, in which audit assignment period is maximum 5 consecutive years. Therefore it is expected that through this assignment limitation, audit quality from Audit Firm and trust on financial report presentation conformity maintained and could minimize audit risks.

Audit Firm specialization is expertise in industry formed through repetition of audit setting on same company. The more frequent Audit Firm conducting audit process and similar company type, the more increased knowledge to detect audit risk on such company.

Several researches relevant with this research had been numerosely conducted. Amongst them were Christian and Nugrahanti (2014) research generating conclusion that Audit Firm size did not significantly influence on earning management, Farmansyah (2014) research that generating conclusion that audit tenure did not significantly influence on earning management level, Audit Firm size negatively influenced on earning management, Arfan (2013) generating conclusion that Audit Firm size and Audit Firm tenure negatively influenced on accrual management, Inaam, Khmoussi, and Fatma (2012) generating conclusion that Audit Firm size negatively influenced on accrual earning management, Audit Firm size positively influence on real earning management meanwhile audit tenure did not influence on earning management, Gerayli, Yanesari, and Ma’aatoofi (20110 generating conclusion that Audit Firm had significant negative influence on earning management.

Meanwhile, contrary research result found by Rusmin (2010) that generating conclusion that auditor quality generating low accrual discretionary and Luhgiatno (2008) that generating conclusion that Big Four Audit Firm could not limit company earning management practice that they audit. Previous research result inconsistency causing research on earning management even interesting and crucial to discuss, that researcher motivated to re-examine Audit Firm specialization, Audit Firm size, Audit Firm tenure influences on earning management on manufacturing companies listed on BEI of 2014-2016 period. This research sample collection justification is on company type and this period were taken as on such period new Government Regulation had been released that it limited longer assignment process and manufacturing companies tend to conduct earning management practice due to high cost and quite large company number that might be tested and could become renewability on this research.

This research result expected to provide benefit for subsequent researcher and enrich other researcher to develop this research, especially for those desiring to examine research with different kind of company. It also be expected to become consideration for company or investors in terms of investment judgment by observing several factors within research, and provide beneficial contribution for government and legislation policy maker as consideration of financial report issuance utilized by most of investors.

LITERATURE REVIEW

Stewardship theory originated from human behavior model difference applied within organization. This behavior model is self-serving model and pro-organizational behavior model (Walker & Davis, 1997) in (Luhgiatno, 2008). Based on self-serving behavior model, agency theory developed. Stewardship theory developed on basis of pro-organizational behavior model. This theory assumes that “manager is good and industrious company servant to achieve high profit level and capital return level for shareholders.” Therefore manager could be motivated by achievement and need of responsibility and working with
own initiative. Manager would act according to what company desire to attain (pro-organizational behavior).

Stewardship theory is consistent with organizational theory that perceive organization as set of smart man that consistently oriented on organizational objective attainment (Walker & Davis, 1997) in (Luhgiantno, 2008). Psychological factors behind stewardship theory perceive human as more complex and more humanist creature. Walker and Davis (in Luhgiantno, 2009) characterized human model as self-actualization. This model based on perspective that human has need to grow outside their current and attains higher attainment level.

Agency theory is one of game theory form, a contractual model between two people (parties) or more, that described relationship between agent (business management) with principal (business owner). According to Eisendhardt (1989), agency theory intended to overcome issues on agency theory and regulated contract regulating relationship between principal and agent by considering the following three assumptions:

There are three inevitable human basic natures according to this assumption. They are: (1) self-interest (more self-accentuate or self-prioritize), (2) Bounded rationality (having limited rationality), and (3) Risk aversion (avoid risk).

Organizational assumption referred to herein describes that in organization, human is creature with certain objective and sought to have certain attainment amongst other organizational members.

This assumption describes that for human information serves as purchasable commodity. According to Scott (2009), there are two kinds of informational asymmetry namely adverse selection and moral hazard. Adverse selection occurs as company management party and other internal parties have better knowledge on current condition and future company prospect compared to investors outside company.

Company perceived as contract between employee, manager, supplier and capital supplier that constitute center of company operation. Company would minimize various contract costs in connection with contract such as negotiation, contract performance monitoring, renegotiating costs and costs expected from bankruptcy and other failures. Positive accounting theory describes why company optimizes accounting policy as part of deep issues from minimizing contract cost and attaining corporate governance efficiency.

Three PAT hypotheses made as earning management action basic understanding by Watts and Zimmerman (1986) are as follow:

In company with bonus allocation plan, company manager would prefer accounting method that could shift profit from future into current condition that it could increase current profit. This is due to manager prefer higher remuneration allocation for current condition. There are two terms in bonus contract, namely bogey (lowest profit level to attain bonus) and cap (highest profit level). If profit fall under bogey, no bonus that manager shall attain, meanwhile if profit higher than cap, no additional bonus for the manager. If net profit fall under bogey, manager tend to cut down profit by expecting for higher bonus for subsequent period, likewise if profit higher than cap. Therefore only when net profit range between bogey and cap, manager would seek to increase company net profit.

In company with high debt to equity ratio, company manager tend to utilize accounting method that suspends profit reported from current period into future period that it could minimize reported profit. Political costs incur due to high company profitability could attract media and consumer attention.

In large company with high political costs, manager would prefer accounting method that suspends profit reported from current period into future period that it could minimize reported profit. Political costs incur due to high company profitability could attract media and consumer attention.

Audit generally categorized into the three following types (Arens et al., 2008). Financial report audit intended to determine whether entire financial report as measured information to verify has been presented in compliance with certain criteria. Generally, those criteria are accounting principles that commonly prevail. Financial report audit composed according to
Operational audit is review of part as well as operational procedure and method of organization to assess its efficiency and effectiveness. Generally, as this operational audit completed, auditor would provide several suggestions for management to improve company operational.

Compliance audit intended to consider whether auditee (client) has followed procedure or regulation already stipulated by party with higher authorization.

According to Healy and Wahlen (1999), “Earning Management occurs when managers use judgment in financial reporting and in structuring transaction to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers”. Setiawati and Na’im (2000) described that earning management is management intervention effort within external financial reporting process for their own benefit.

In contrary with Harahap (2011) in Pradani (2013), earning management is effort of managing Earning Management profit that in accounting dictionary referred to as window dressing or accounting lipstick to create more beautiful financial report. Scott (2012) stated that earning management is one of manager option concerning accounting policy or actual action that could influence earning that company profit could be arranged.

Based on several above definitions it could be concluded that earning management is intentional intervention by management within company financial report process into company external party utilizing their judgment to influence its users decision for the sake of personal benefit.

**HYPOTHESIS DEVELOPMENT**

Auditor with numerous clients with similar company type would have better understanding and knowledge concerning such company type. Knowledge on company internal control, business risk, and audit risk on such company type becomes more sufficient. Several research which amongst them according to Carcelo and Nagy (2002) generated evidence where client of specialist auditor more rarely interact with SEC sanction in United States of America. Jenkins et al. (2006) result suggested that high audit quality require auditor with industry specialization that trust level on profit quality shall be better, where it aligns with auditor understanding on audited company type.

Several researches showed that client with financial report audited by auditor with industry specialization would have lower discretionary accruals compared to client without specialization (Balsam et al., 2003. However as Audit Firm specialization still unable to directly observed, this research used different measurement from previous existing research.

Second research from Jenkins et al. (2006) recommended that for higher audit quality, auditor quality utilization with industry specialization is expected to improve audit quality. And auditor with industry specialization shall be better in detecting misstatement on similar industry specialization compared to different industry type (Owhoso et al., 2002). Based on such several researches the following is formulation for first hypothesis:

**H1:** Audit Firm specialization negatively influence on earning management.

Audit company size according to Deis Jr and Giroux (1992) measured from total client and percentage from audit fee in effort maintaining its client from moving into other audit company. Research carried out by DeAngelo (1981) argument that audit quality directly related to audit company size with proxy for audit company size is total client. Large audit companies are those with more total client. This research showed that large audit company would sought to provide better audit quality compared to small audit company. As large company audit would lose its reputation for not providing high quality auditing, and this would certainly bigger lost than loosing client.

According to DeAngelo (1981), Audit Firm size could provide added value to provide better audit quality compared to small Audit Firm, meanwhile according to Arnett and Danos (1979), Audit Firm size could not be made as basis for certain work succeed. As long as
Audit Firm could maintain their professional standard and qualification then it would not be ethical to distinguish Big Eight Audit Firm with other than Big Eight Audit Firm.

In terms of Audit Firm size according to Francis and Yu (2009), larger AUDIT FIRM size would generate higher audit quality. In addition, Choi, Kim, Kim, and Zang (2010) also discovered consistent result. This research used discretionary accrual for Audit Firm size using total client. According to above theory understanding, second hypothesis of this research is:

\[ H_2: \text{Audit Firm size negatively influence on earning management.} \]

Audit tenure is assignment duration established between auditors with audit service client (Al-Thuneibat et al., 2011). Myers, Myers, and Omer (2003) defined audit tenure as total auditor years in auditing their client. Therefore audit tenure is duration of an auditor conducting audit on company measured in year.

According to Decree of Capital market Financial Institution Supervision Board Chairman Number: KEP-310/BL/2008 on audit period assignment limitation section described that general audit service provision for client financial report could only be performed by Audit Firm (Public Accounting Firm) for 6 (six) consecutive fiscal years at the longest and 3 (three) consecutive fiscal years for a Public Accountant.

However regulation used in this research was not in accordance with Government Regulation of the Republic of Indonesia Number 20 Year 2015 concerning Public Accountant Practice on section V concerning audit limitation service, on article 11 paragraph 1 stated that audit service provision for historical financial information as referred to in article 10 paragraph (1) point a on certain entity by a public accountant limited for 5 (five) consecutive fiscal years at the longest.

Tenure commonly associated with its influence on auditor independence. Long relationship between Audit Firm and client potentially inflicting closeness between those parties, and it could impede auditor independence and reducing audit quality (Al-Thuneibat et al., 2011).

Long relationship between Audit Firm and client could also inflict Audit Firm closeness with company management that causing independence attitude becomes hard to apply by Audit Firm (Dao, Mishra, & Raghunandan, 2008).

\[ H_3: \text{Audit Firm Tenure negatively influence on earning management.} \]

METHODS OF RESEARCH

Populations are complete element group, commonly in form of person, object, transaction, or incidence where we interested in learning them or become research object (Kuncoro, 2003).

Populations in this research were entire company listed on Indonesian Stock Exchange (BEI) in 2014-2016. The following are population criteria:

1. Company issuing financial report and/or annual report in 2014-2016 period;
2. Company fully operated during 2014-2016 and not included in Initial Public Offering (IPO) within observation period;
3. Company not making delisting from BEI, not terminating operational activity, not conducting business merger and not changing sector status within observation period;
4. Company presenting financial report stated in Rupiah;
5. Company outside financial industry sector;
6. Public Accountant Office name that audit company financial report, clearly outlined on financial report published by BEI.

Manufacturing company populations categorized into three of the following industry sectors, fundamental and chemical industry sector.

According to Kuncoro (2003), variable is something that could distinguish or change value. Value could be different for exact object, or it could be different in exact time for different object. This research used three kinds of variable, independent variable, intervening variable and dependent variable.
Dependent variable is variable influenced by independent variable existence (Sugiyono, 2011). This research used earning management as its dependent variable. Earning management defined as policy that could intervene company external party using financial report to influence decision to attain personal benefit. On this research earning management used model (DeAngelo, 1981) where total accruals comprised of discretionary accrual and non-discretionary accrual, where total accruals deemed hard to observe. This approach assumes non-discretionary accrual component tend to be stable across time that making discretionary accruals component worth considered. Therefore, if discretionary accrual has average equal to zero during estimation period than this model is worth used to measure discretionary accrual without mistake. Discretionary accruals level calculation initiated with total accruals calculation. Total accruals formula (Teoh et al., 1998):

\[\text{TAC}_t = (\text{NIt} - \text{CFFOt})\]

Where: \(\text{TAC}_t\) = Total accruals on year \(t\) period; \(\text{NIt}\) = Net income on year \(t\) period; \(\text{CFFOt}\) = Cash flow from operation on year \(t\) period.

DeAngelo (1986) assumed that non-discretionary total accruals following random walk pattern. Therefore non-discretionary total accruals (fair or normal accrual level) on \(t\) period assumed as similar with non-discretionary total accruals on \(t-1\) period:

\[\text{NDAt} = \text{TAC}_{t-1}\]

Where: \(\text{NDAt}\) = Non-discretionary Accruals on \(t\) period; \(\text{TAC}_{t-1}\) = Total accruals on \(t-1\) period.

Upon calculating NDAt, DA\(t\) size could be calculated with the following formula:

\[\text{DAt} = (\text{TAC}_t - \text{NDAt}) / \text{TAt}\]

Where: \(\text{DAt}\) = Non-discretionary Accruals on \(t\) period; \(\text{TAC}_t\) = Total accruals on \(t-1\) period; \(\text{NDAt}\) = Non-discretionary Accruals on \(t\) period; \(\text{TAt}\) = Total assets on \(t-1\) period.

Independent variable is variable influencing related variable (Sugiyono, 2011). Independent variables used in this research were Audit Firm specialization, Audit Firm size and Audit Firm tenure.

**Audit Firm Specialization** (\(X_1\)). Audit Firm with industry specialization are those performing audit process on specific sector such as manufacture, banking, etc., and having more reliable experience on such sector (Lee, 2007). Industry specialization measurement measured using dummy variable, using scale 1 if on one assignment year Audit Firm conducting audit on similar sector for minimum 10% on single industry type and scale 0 if less than 10%.

**Audit Firm Size** (\(X_2\)). Audit Firm size determined using rank for total client audited divided by total company listing on one assignment year. The higher total company percentage, the higher company rank level and determine such Audit Firm audit quality.

**Audit Firm Tenure** (\(X_3\)). Audit Firm tenure is audit assignment period between Audit Firm and audit service related client that previously agreed. Audit Firm tenure variable was dummy variable, using scale 0 for Audit Firm with assignment period 0-2 years and 1 for Audit Firm with 3-5 years assignment period.

Auto correlation is statistical analysis conducted to discover variable correlation exist in prediction model with time change. Therefore, if auto-correlation assumption occur on prediction model, then disturbance value no longer freely associate, but associate in auto-correlate manner.

**RESULTS AND DISCUSSION**

Research data originated from annual report of manufacturing companies listed on Indonesian Stock Exchange (BEI) on 2014-2016 period. Such data obtained through
downloading from www.idx.com or each company sites. From data obtained on Indonesian Stock Exchange, samples were obtained for observation period of 2014-2016 as of 202 companies.

Researcher conducted descriptive statistics analysis to discover data distribution from research sample and descriptive statistic testing result generating minimum value, maximum value, median and standard deviation from each research variable.

Descriptive statistic testing result showed that Audit Firm specialization variable on 2014-2016 measured using dummy variable, using scale 1 if on one year of assignment Audit Firm conducting audit process on company of similar sector for minimum 5% on single similar industry type and scale 0 if less than 5%. The 202 samples had minimum value of 0 and maximum value of 1, with mean (average) of 0.9158 and standard deviation of 0.278. Such values described even lower distribution and data variation, as it had standard deviation lower than mean value (0.27831 < 0.9158).

Descriptive statistic testing result for Audit Firm size variable on 2014-2016 period measured using rank for number of client audited on observation period on 15 Audit Firm with the most auditee had score 1 and 0 for below 15. The 202 samples had minimum value of 0 and maximum value of 1, with mean (average) of 0.8218 and standard deviation of 0.38365. Such values described even lower distribution and data variation, as it had standard deviation lower than mean value (0.38365 < 0.8218).

Descriptive statistic testing result for Audit Firm tenure variable on 2014-2016 period from 202 samples had minimum value of 0 and maximum value of 1, with mean (average) of 0.9802 and standard deviation of 0.13967. Such values described even lower distribution and data variation, as it had standard deviation lower than mean value (0.14 < 0.98).

Descriptive statistic testing result for earning management variable on 2014-2016 period from 202 samples had minimum value of 0.00 and maximum value of 0.86, with mean of 0.0771 and standard deviation of 0.11934. Such values described even lower distribution and data variation, as it had standard deviation lower than mean value (0.11934 < 0.0771).

Auto-correlation test is statistical analysis used to discover variable correlation in certain prediction model with time change. This research showed that no correlation occur between residual, marked from DW (Durbin Watson) value of 2.004 which means between -2 and +2, that it could be concluded that multiple linear regression model generated no auto-correlation occur and feasible to use.

Multicollinearity test is certain situation represented with strong correlation or relationship between two or more independent variable in certain multiple regression model. Test used to discover multicollinearity existence is VIF. If VIF > 10 then multicollinearity occur between independent variables and VIF <10 represents no multicollinearity between independent variables. The following are VIF result on each independent variable:

| Dependent Variables | VIF |
|---------------------|-----|
| Audit Firm Specialization (X1) | 0.024 |
| Audit Firm Size (X2) | 0.034 |
| Audit Firm Tenure (X3) | 0.014 |

According to Table 2 it could be concluded that no multicollinearity on regression model, as VIF value generated by Audit Firm Specialization (X1), Audit Firm Size (X2) and
Audit Firm Tenure \((X_3)\) were lower than 10. Therefore regression model from the least square method (OLS) could be used.

Hypothesis test in this research used multiple regression analysis. \(H_1\), \(H_2\), and \(H_3\) hypothesis shall be tested using the following empirical model:

\[
\text{ABSDA} = \alpha + \beta_1 \text{AF-SPEC} + \beta_2 \text{AF-SIZE} + \beta_3 \text{AF-TENURE} + \varepsilon
\]

Where: \(\alpha = \text{constant}\); \(\beta = \text{variable coefficient}\); \(\text{ABSDA}\) = absolute value from discretionary accruals (earning management). Absolute value used as discretionary accruals size are concern of this research, instead of its direction (positive or negative) (Balsam et al. 2003); \(\text{AF-SPEC}\) = Audit Firm specialization, score 1 if company audited by auditor industrial specialization and 0 if others; \(\text{AF-SIZE}\) = Audit Firm size, score 1 if company audited by Audit Firm with high rank and 0 if others; \(\text{AF-Tenure}\) = Audit Firm tenure if company audit for more than or equal to three years (score 1), and score 0 if others; \(\varepsilon\) = residual of error.

Table 3 – Hypothesis Test Result

| Dependent Variables          | Regression Coefficient | Std. Error | t     | Sig   |
|-----------------------------|------------------------|------------|-------|-------|
| Audit Firm Specialization \((X_1)\) | -0.038                 | 0.035      | -1.065| 0.288 |
| Audit Firm Size \((X_2)\)    | -0.004                 | 0.026      | -0.152| 0.879 |
| Audit Firm Tenure \((X_3)\)  | 0.038                  | 0.061      | 0.620 | 0.536 |

Dependent variables: Earning Management \((Y)\)
Constant: 0.078
Correlation Coefficient \((R)\) = 0.101
Determination Coefficient \((R^2)\) = 0.010

Table 4 – Analysis of Variance (ANOVA)

| Variance Source | Total Square | df | Middle Square | F     | Sig   |
|-----------------|--------------|----|---------------|-------|-------|
| Regression      | 0.029        | 3  | 0.010         | 0.676 | 0.568 |
| Residual        | 2.834        | 198| 0.014         |       |       |
| Total           | 2.863        | 201|               |       |       |

According to Table 4, the following multiple regression analysis obtained:

\[
Y = 0.078 - 0.038X_1 - 0.004X_2 + 0.038X_3
\]

Based on above equation, it could be described as follow: \(a = \text{Constant} = 0.078\).

Constant value of 0.078 means that Earning Management \((Y)\) is constant with assumption that Audit Firm Specialization variable \((X_1)\), Audit Firm Size \((X_2)\) and Audit Firm Tenure \((X_3)\) in constant condition.

\(b_1 = \text{Regression Coefficient for } X_1 = -0.038\).

This showed Audit Firm Specialization Variable \((X_1)\) influence size on earning management, which means if Audit Firm specialization variable increase 1 point then earning management value would reduce as of 0.038 point with assumption that other independent variables are constant.

\(b_2 = \text{Regression Coefficient for } X_2 = -0.004\).

This showed Audit Firm Size Variable \((X_2)\) influence size on earning management, which means if Audit Firm size variable increase 1 point then earning management value would reduce as of 0.004 point with assumption that other independent variables are constant.

\(b_3 = \text{Regression Coefficient for } X_3 = 0.038\).

This showed Audit Firm Tenure Variable \((X_3)\) influence size on earning management, which means if Audit Firm tenure variable increase 1 point then earning management value would reduce as of 0.038 point with assumption that other independent variables are constant or equal to 0.

Adjusted \(R^2\) (determination coefficient) value was 0.010 that represented independent variable ability in influencing dependent variable was 0.010. It means that accuracy level.
from being able to account for relationship between Audit Firm specialization, Audit Firm Size and Audit Firm Tenure with earning management variable was 1%. Meanwhile the remaining 99% accounted by other variable. Multiple correlation coefficient was 0.101 which means weak correlation between independent variable with dependent variable was 10.1%.

Audit Firm Specialization Influence on Earning Management. According to hypothesis test result using SPSS software showed that Audit Firm Specialization did not influence on earning management, evidenced from β value of -0.038 and p-value of 0.288 (higher than significance level of 10% or 0.10), therefore H1 which stated that Audit Firm specialization influence on earning management is rejected.

This first hypothesis testing result is in line with research conducted by Dian and Yuyetta (2013) showing that auditor industry specialization did not influence on earning management. This research also contrary with Mayhew et al. (2001) research showing that auditor industry specialization assignment could discover earning management, prediction mistake and ability to predict cash flow and future profit admission.

Therefore Audit Firm with industry specialization that should have sufficient understanding concerning industry characteristic, audit standard conformity, and understand more concerning audited industry risk and issue, not certainly better have ability in detecting mistake compared to non-industry specialization, in addition object from manipulation are not financial report but process in cost disclosure that could influence profit.

Audit Firm Size Influence on Earning Management. According to hypothesis test result using SPSS software showed that Audit Firm Size did not influence on earning management, evidenced from β value of -0.038 and p-value of 0.879 (higher than significance level of 10% or 0.10), therefore H2 which stated that Audit Firm size influence on earning management is rejected.

This second hypothesis testing is in accordance with Febriyanti and Mertha (2014) research stating that Audit Firm size did not influence on earning management. Research carried out by Gerayli et al., (2001), Rusmin (2010) and Inaan et al., 2012) also stated the similar result where Audit Firm size significantly had negative influence on earning management.

In testing of Audit Firm size, researcher made separation with large and small Audit Firm through ranking based on total auditee. According to data from Financial Profession Guidance Center, researcher obtained Audit Firm data with quite striking total auditee on top 15 Audit Firm with total auditee above 2000 and less than 300 total auditee for Audit Firm under top 15. Separation and variable testing then subsequently performed for Audit Firm size with ability to detect higher risk and sufficient knowledge for their numerous auditee totals. Therefore financial report generated could be trusted and according to existing company condition.

Audit Firm Tenure Influence on Earning Management. According to hypothesis test result using SPSS software, Audit Firm tenure did not influence on earning management, observed from β value of 0.038 and p-value of 0.536 (higher than significance level of 10% or 0.10) therefore H3 which said that Audit Firm Tenure negatively influence on earning management is rejected.

This research result is in line with Dian and Yuyetta (2013) research, stating that long enough assignment period prone to influence auditor independence but short assignment period could also influence understanding on company condition. This result is in contrary with Deis Jr and Giroux (1992) research, stating that the loner audit period (audit tenure) should make auditor more challenged and innovative on audit procedure. Lavin (1976) in his research also stated that the longer audit period make decreased independence as auditor would have financial independence on client.

Audit Firm with long assignment period should be able to understand company condition and have better understanding company existing risk. However in order to avoid overlap assignment period between Audit Firm and auditee, regulation was enacted in Government Regulation Number 20 Year 2015, intended to avoid strictly close relationship that could reduce financial report quality.
CONCLUSION AND RECOMMENDATIONS

Based on research result analysis and discussion previously outlined, there are several conclusion as follows. This research analyzed Audit Firm specialization, Audit Firm size and Audit Firm tenure influences on earning management with samples of 202 companies listed on Indonesian Stock Exchange (BEI) of 2014-2016 period, using 202 companies as samples in this research. This research used multiple linear regression analysis to process data, supported with SPSS software. First hypothesis test result of this research showed that Audit Firm specialization did not influence on earning management. Second hypothesis test obtained in this research showed that Audit Firm size did not influence on earning management. Third hypothesis testing showed that Audit Firm tenure did not influence on earning management.

Researcher recognized several limitations of this research, amongst them researcher found difficulty in obtaining data fee audit that measurement on Audit Firm size variable used rank on auditee total. Such ranking collected based on data from Financial Profession Guidance Center (FPGC) in performing data separation of 15 large Audit Firm with auditee above 1000 (go-public and non go-public) and outside top 15 with auditee total below 300 (go-public and non go-public). This data made as basis for variable testing for Audit Firm size, Audit Firm names from data audit fee from FPGC are disguised, therefore making it difficult to separate.

Further researcher use other measurement tool on Audit Firm size variable, for instance using Audit Firm total assets based on Audit Firm fee from company or total assets of Auditee Company. Secondly, samples should be enlarged for instance through sample that compare cross-country between Audit Firm performing audit process in Indonesia and abroad.

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EFFECT OF BRAND IMAGE AND SERVICE QUALITY ON CUSTOMER SATISFACTION AND LOYALTY AT BANK JATIM SYARIAH SURABAYA

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ABSTRACT
The research objective is to examine the effect of brand image on customer satisfaction, examine the effect of service quality on customer satisfaction, and examine the effect of customer satisfaction on customer loyalty. The research hypotheses state that brand image has an effect on customer satisfaction, service quality has an effect on customer satisfaction, and customer satisfaction has an effect on customer loyalty. This research uses survey data from customers of Bank Jatim Syariah Surabaya. The data were collected using a questionnaire from respondents who were customers of Bank Jatim Syariah Surabaya, had at least one account at Bank Jatim Syariah Surabaya, and were at least 17 years old. The hypothesis testing techniques are carried out using SEM analysis with the AMOS program. The research findings indicated that brand image has a positive and not significant effect on customer satisfaction, service quality has a positive and significant effect on customer satisfaction, customer satisfaction has a positive and significant effect on customer loyalty at Bank Jatim Syariah Surabaya. This research showed that there is a positive and not significant correlation between brand image and customer satisfaction because the public knows Conventional Bank Jatim more; so that, Bank Jatim Syariah Surabaya is not yet widely known to the public. In addition, Civil Servants in Surabaya have long been permanent customers of Conventional Bank Jatim. Based on the research findings, the more satisfied customers, the more loyal customers will be at Bank Jatim Syariah.

KEY WORDS
Brand image, service quality, satisfaction, loyalty.

Indonesia is a country with a majority of Muslim population. It is common for sharia banking in this country to grow and develop. Its growth and development are enlivened by various sharia banks that compete in national competitions.

Sharia Business Unit, hereinafter referred to as UUS, is a work unit of the head office of a Conventional Commercial Bank that functions as the parent office of an office or unit that conducts business activities based on sharia principles, or work units in branch offices of a Bank domiciled abroad carry out conventional business activities and function as the parent office of the sharia supporting branch office and/or sharia unit (Law of the Republic of Indonesia number 21 of 2008 concerning Sharia Banking).

Based on the Best Syariah Award 2016 held by Investor Magazine, awards are given to the six best sharia banks which include:

Table 1 – Rank of Best Syariah Award

| No. | Bank                  | Assets                      |
|-----|-----------------------|-----------------------------|
| 1   | BNI Syariah           | above IDR 10 trillion       |
| 2   | Bank Panin Syariah    | below IDR 10 trillion       |
| 3   | Maybank Indonesia UUS | above IDR 5 trillion        |
| 4   | BPD Aceh UUS          | IDR 1 trillion - IDR 5 trillion |
| 5   | BPD DIY UUS           | below IDR 1 trillion        |
| 6   | BPD Jambi UUS         | below IDR 1 trillion        |

Source: Investor Magazine (2016).
There are three Regional Development Banks (BPD) UUS which have the best title for sharia bank. East Java, along with its Bank Jatim Syariah UUS, has not been able to reach the sixth best rank on a national scale. This becomes an interesting problem to be researched, discussed and debated among practitioners and academics. It is about why UUS, which is located in one of the provinces on the Java Island that has a dense economic transaction, cannot win the title of the six best sharia banks on a national scale.

Indeed, East Java is one of the provinces with economic traffic that is no less crowded than Jakarta, West Java & Banten, Central Java and the Special Region of Yogyakarta. East Java has a bank that is an icon and characteristic of East Java, i.e. PT. Bank Pembangunan Daerah Jawa Timur, Tbk, commonly referred to as Bank Jatim. Currently, Bank Jatim has a Sharia Business Unit (UUS) or called Bank Jatim Syariah Surabaya which was established based on Bank Indonesia Letter Number 9/75/DS/Sb dated April 4, 2007 concerning: Approval of the Principles of Establishment of Sharia Business Units (UUS), Office Opening Sharia Branch and Sharia Supervisory Board Members as well as Bank Indonesia Letter Number 9/148/DPIP/Prz/Sb dated July 24, 2007 concerning: Permission for Opening of Sharia Branch Offices. (http://www.bankjatim.co.id/id/syariah/profil).

Brand image on sharia banks is the perception that appears in the minds of the public towards sharia banks; does the sharia bank have a positive image or vice versa. According to Kotler and Armstrong (2008), a brand is a name, term, sign, symbol or design, or a combination of all that shows the identity of a product or service from a seller or group of sellers and distinguishes the product from competing products.

So that the formation of a brand image in a Sharia Bank becomes important in order to lead positive opinions among the people of their awareness to save and do all financial transactions in a Sharia Bank; in this case, Bank Jatim Syariah Surabaya. The more important is the creation of customer satisfaction in Bank Jatim Syariah Surabaya because customer satisfaction is the estuary of the sustainability of the sharia banking business. In a research conducted by Kurniawati (2014), brand image has a significant effect on customer satisfaction. That is also supported by Lahap et al (2015) research which concluded that there is a positive correlation between brand image and customer satisfaction. However, there is one research conducted by Sondakh (2014) that found a negative correlation between brand image and customer satisfaction (study on BNI Taplus Branch customers). Based on the above two different research findings, it becomes an interesting object to study about how brand image actually correlates to customer satisfaction.

Sharia banking service competition to customers is one of the attractions for customers who cannot be ignored. This is a factor that creates customer satisfaction in each sharia bank. However, customer satisfaction must also be accompanied by customer loyalty. Customer satisfaction is related to what is expressed by customers about their perceptions and expectations of the services they obtain. Meanwhile, loyalty is related to what customers do after interacting in the service process. This concept implies that customer satisfaction is not enough because complacency or dissatisfaction is only one form of emotion. Besides, customer loyalty is equally relevant to be analyzed. Based on a research conducted by Izogo and Ogba (2015), service quality is positively related to customer satisfaction and loyalty. There are also other researches that support it; i.e. a research conducted by Sondakh (2014) which concluded that service quality has a significant effect on customer satisfaction. Moreover, customer satisfaction has a significant effect on customer loyalty. Parasuraman in Kheng et al (2010) stated that service means the degree of difference arising from the service process and the interaction between service providers and customers.

The brand image and service quality of sharia bank of is very important for the creation of customer satisfaction and loyalty. This is an interesting thing for Bank Jatim Syariah Surabaya which is still very early in starting its business in the national domain. The customers are mostly engaged in the private sector and various levels of society in which the number of customers is not yet relatively large compared to Bank Jatim (conventional).

The spin off issue has been stated in the banking rules by the FSA. Bank Jatim Syariah Surabaya, which was inaugurated in 2007, has the opportunity of the Financial Services Authority to grow and develop until it is feasible to spin off. What is meant by spin off is
separation as stipulated in the provisions governing sharia business units (Financial Services Authority Regulation Number 5/pojk.03/2016 concerning Bank Business Plans). With a maximum period of 2023, all Banks with Sharia Business Unit status (UUS) become Sharia Commercial Banks (BUS) (Bank Indonesia Regulation Number 15/14/PBI/2013 concerning Amendments to Bank Indonesia regulations number 11/10/PBI/2009 concerning Sharia Business Unit).

By the enactment of these regulations, Bank Jatim Syariah Surabaya is encouraged to do the best for its growth and readiness to become a BUS. Meanwhile, customer loyalty is important as a capital of readiness. Customer loyalty will be difficult to form if it is not accompanied by excellent service. In the preparation for spin off, how is the readiness of Bank Jatim Syariah Surabaya for its services to its customers? In addition, what is the brand image of Bank Jatim Syariah Surabaya in the minds of the public; considering that Bank Jatim Syariah has not been able to achieve the title of the best UUS sharia bank on a national scale.

Based on empirical studies and the results of an explanation of Bank Jatim Syariah Surabaya, this bank is one of the Islamic banks in East Java which contributed performance results in the ranking of Indonesia’s sharia banking management even though it was relatively early in its development and breakthroughs for its progress. The preparation in welcoming spin off makes a condition for Bank Jatim Syariah to be able to develop and progress in accordance with the expectations of all stakeholders.

Does the brand image of Bank Jatim Syariah Surabaya create satisfaction in the community when they become customers of Bank Jatim Syariah Surabaya? Besides, how is the service quality of Bank Jatim Syariah Surabaya which is an appropriate strategy to make loyal and satisfied customers? A good brand image supported by reliable service quality to realize customer satisfaction and loyalty is the key to the success and sustainability of the Islamic banking business and determine the ranking of sharia banking management on a national scale.

Through the description of the above background, the author is interested in conducting a study with the title: “Effect of Brand Image and Service Quality on Customer Satisfaction and Loyalty at Bank Jatim Syariah Surabaya”.

LITERATURE REVIEW

Brand image can be defined as a perception of an expectation that appears in the minds of customers when remembering a brand of a particular product. Here are some definitions of brand image:

According to the American Marketing Association in Kotler and Keller (2009), brand is name, term, sign, symbol, or design, or their combination, which is intended to identify goods or services from one seller or group of sellers and differentiate from competing goods or services.

According to Kotler and Armstrong (2008), a brand is a name, term, sign, symbol or design, or a combination of all these things that shows the identity of a product or service from one seller or group of sellers and distinguishes the product from competing products.

According to Lahap et al (2015), brand image is basically what goes into the minds of customers when the brand is placed in front of the customer. In other words, it means that when customers value brand names, they spontaneously think of the features of a brand.

Brand image is a perception of a brand that is a reflection of customer memory of its association with that brand (Ferrina Dewi, 2008).

Based on the above definition, it is concluded that brand image is a picture or impression that is generated by a brand in the customer’s mind. Exposure of brand image in the minds and hearts of customers must be carried out continuously so that the brand image that is created remains strong and can be received positively. When a brand has a strong and positive image in the minds and hearts of customers, the brand will always be remembered. Then, the possibility of customers to buy the brand will be very high.

According to Lahap et al (2015), brand image indicators consist of:
This bank provides convenience in transactions. This bank has a very clean image. This bank is luxurious. This bank is a place that is suitable for high class (luxury). I become special by visiting this bank. This bank staff is very kind. This bank has a long history. This bank has a different image than the others.

There are many opinions regarding the definition of quality because quality has a relative size of an item or service that is assessed by the attributes, design, and suitability of the buyers. The definition of service quality may be different. However, specifically it covers matters in determining whether the service is in accordance with customer expectations (Edgar and Galia, 2009). Customers assess service quality based on their perceptions of technical results which is the process by which the results are delivered.

Parasure in Kheng et al (2010) stated that service means the degree of difference arising from the service process and the interaction between service providers and customers.

Service quality has been conceptualized as the difference between customer expectations regarding the services they will receive and the perception of the services they have (Akbar and Parves, 2009). Service quality is a multidimensional concept (Bloemer et al, 1998).

SERVQUAL (Service Quality) has proven to be a model that has been widely used in various organizations and industries to measure service quality including the banking industry (Siddiqi, 2011). Although management has implemented the five dimensions of service quality as a reference for the application of the marketing concept, sometimes there are gaps or distances between the service quality perceived and accepted by customers with what they expect. Quality gaps are important because it is the overall assessment of the customer to what is expected compared to what is received (Lovelock and Wright, 2007). According to Parasuraman (1988) in Kashif et al (2015) it includes:

- **Tangible** includes physical facilities, equipment, personnel and means of communication. The indicators can be seen from: tools and equipment used by modern sharia banks, attractive facilities offered by sharia banks, communication materials of sharia bank that are easy-to-understand, well-equipped sharia bank buildings;

- **Reliability** is the ability to produce promised service performance accurately and appropriately. Services must be on time and in the same specifications to minimize the possibility of errors. The indicators can be seen from: sharia bank employees that fulfill their promises, service specifications of sharia banks, sharia bank that provides services without error, the promised services of the sharia banks are available at all times;

- **Responsiveness** is the willingness to help customers and provide fast service. The indicators can be seen from: fast service to customers, ability to calm customers who make complain, providing help immediately to customers who experience a difficulty in transactions;

- **Assurance** includes knowledge and respect for employees. In this case their ability means a guarantee of the certainty to the services. The indicators can be seen from: sharia bank employees who are competent to be professional, sharia bank offers financially safe investments, sharia bank employees are polite, sharia bank employees have the appropriate knowledge;

- **Empathy** is inspiration and personal attention to customers. The indicators can be seen from: the attitude of sharia bank employees in providing services, the sensitivity of sharia bank employees in knowing customer interests, the sensitivity of sharia bank employees in knowing customer needs.

Kotler and Keller (2009) defined customer satisfaction as the level of one’s feelings as a result of a comparison between reality and hope in a product and service. Parasuraman et al (1988) defined service quality as a customer assessment of the superiority or privilege of a service product as a whole. Akbar and Parves (2009) stated that satisfaction is a customer’s evaluation of a product or service; whether or not the product or service has met their needs and expectations.
Parasuraman and Berry (1988) defined service quality as a form of attitude that is related but not the same as satisfaction; as a result of a comparison between expectations and performance. Customer satisfaction plays an important role because it has a big difference in loyalty between customers who are simply satisfied and who are truly satisfied (Lovelock and Wright, 2007).

Based on the definition above, it is concluded that customer satisfaction is a positive feeling accompanied by attitudes of customers after they experience a situation or condition when they use the product or service.

Lahap et al (2015) elaborated customer satisfaction indicators as follows: hotel employees are friendly to customers, how well staff or managers know customers, how well banks listen to customer needs, convenient services, timeliness of bank staff in serving customers, bank administration fees, cheap banking product prices, affordable bank locations, easy bank access from airports and highways, good interior design/bank decoration, good facilities in the bank lobby, facilities offered by banks, excellent quality of bank services.

According to Pitchayademianant and Nakpathom (2016), customer loyalty is defined as a very strong commitment to buy back products or services the customers like consistently in the future.

Rimiyati and Widodo (2014) stated that loyalty can be defined based on buying behavior. Loyal customers are people who: make repeated purchases regularly, buy inter-line products and services, refer the product to others, show ignorance to attraction from competitors.

Based on the various literature, the definition of loyalty is a level where customers make a repeated purchase behavior from a supplier of goods or services, have a positive attitude towards the company, and make the main consideration to use the company's products when they need particular goods or services.

According to Pitchayademianant & Nakpathom (2016), loyalty indicators include: I am happy to recommend this bank to others, I am proud to be a customer of this bank, this bank is my first choice, I will choose this bank continuously, this bank is very interesting, I want using this bank, this bank is good.

The findings of the research conducted by Kurniawati et al (2014) found that brand image has a significant effect on customer satisfaction. It was also supported by the findings of Lahap et al (2015) which stated that there is a positive correlation between brand image and customer satisfaction. The two studies illustrate that brand image has a positive correlation with customer satisfaction. However, a research conducted by Sondakh (2014) found a negative correlation between brand image and customer satisfaction (study on Manado Taplus BNI Branch customers) because the BNI brand image has been embedded in the minds of the community. Thus, BNI's brand image is not a problem for the community. That research is the basis of the researchers to examine the correlation between brand image and customer satisfaction at Bank Jatim Syariah Surabaya.

The results of the Al-Azzam study (2015) found that the scale of service quality (SERQUAL) has a significant and positive effect on customer satisfaction. It was also supported by findings from a study conducted by Ashdaq et al (2015) which stated that five service quality variables (SERQUAL) consisting of reliability, responsiveness, assurance, empathy, tangibles have a significant and positive effect on customer satisfaction. By the existence of a positive correlation from previous research, the researchers are interested in examining the correlation of service quality and customer satisfaction at Bank Jatim Syariah Surabaya.

The findings of the research conducted by Sondakh (2014) found that customer satisfaction had a significant effect on customer loyalty. By looking at the findings of previous studies that produced a positive and significant correlation on the two variables, the two variables were interesting to be examined which is related to the research on the correlation between customer satisfaction and customer loyalty at Bank Jatim Syariah Surabaya.
METHODS OF RESEARCH

Research Population and Samples. The research population is the customers of Bank Jatim Syariah Surabaya Branch. Samples are part of the overall population carefully chosen so that it can represent the population (Sugiyono, 2012). Therefore, the research samples are part of the customers of Bank Jatim Syariah Surabaya with certain criteria.

The sampling technique in this research applies one method of purposive sampling; i.e. judgment sampling. According to Sugiyono (2012), the notion of purposive sampling is a technique of determining samples based on certain criteria or considerations. The criteria for determining the sample used in this research are as follows: becoming a customer of Bank Jatim Syariah Surabaya, having at least one account at Bank Jatim Syariah Surabaya, aged at least 17 years according to the minimum age for issuance of Citizen Identity Card or other Identity Card.

The sampling location is at Bank Jatim Syariah Surabaya. The questionnaire was distributed to customers who came to the Bank while waiting for the queue number to be called by Bank officers and also distributed to customers who had finished transacting at Bank Jatim Syariah Surabaya. The number of samples required from this research were 250 respondents. Determination of the sample number of 250 respondents is based on the opinion as follows: the sample size will also consider the method of data analysis. This research uses the data analysis technique of Structural Equation Modeling (SEM). The number of samples is at least 5 times the parameters that will be estimated or at least 100 (Hair et al, 2010). The indicators/ parameters used in this study are 46 items. To meet the minimum number of samples, 46 x 5 = 230 respondents. So, the researchers took samples for this research as many as 250 respondents.

Data Collection Technique. The method of data collection in this research is the questionnaire method; i.e. by giving written questions to respondents that are needed to be answered (Sugiyono, 2012). The questionnaire method is a list of written questions that have been formulated previously which will be answered by respondents in the form of a questionnaire. The questionnaire is given directly to the respondent who will fill it. In this research, the data is measured from respondents’ perceptions of the questions in the questionnaire. Each respondent was required to express his/her opinion about the questions. These questions use five Likert scales ranging from one (strongly disagree) to five (strongly agree). The aim is that the researchers get more accurate data and the data show the real conditions of customers of Bank Jatim Syariah Surabaya.

RESULTS AND DISCUSSION

The data analysis used in this research is descriptive analysis which includes data on two hundred and fifty (250) respondents of Bank Jatim Syariah Surabaya customers on question indicators. Meanwhile, the statistical analysis in this research used Structural Equation Modeling (SEM).

Regarding the brand image of sharia bank in the minds of customers of Bank Jatim Syariah Surabaya, it appears that the overall average of the brand image variable is 3.66, which means that respondents tend to agree with the statement that the bank has a good brand image. The overall average of service quality variable is 3.87 which means that respondents tend to agree with the statement that Bank Jatim Syariah Surabaya has good service quality. The overall analysis shows that the average of service quality variable is 3.94. Based on the predetermined class intervals, respondents tend to agree with the statement that customers have high satisfaction with the services of Bank Jatim Syariah Surabaya. The analysis results show that the overall average of service quality variable is 3.98 which illustrates that respondents tend to agree with the statement that customers have high loyalty.

This technique of Confirmatory Factor Analysis is performed to test a theory or concept about a process or an understanding or a phenomenon (Ferdinand, 2000: 126). The following are the results of confirmatory factor analysis:
Figure 1 – Brand image model before being modified

Figure 2 – Brand Image Model After Being Modified

Table 2 – Goodness of Fit on Modified Brand Image

| Goodness of Fit | Cut off Value | Estimate Results | Description |
|-----------------|---------------|------------------|-------------|
| Chi square      | Kecil         | 8.881            | Good        |
| Significance    | ≥ 0.05        | 0.261            | Good        |
| CMIN/df         | ≤ 2.00        | 1.269            | Good        |
| RMSEA           | ≤ 0.08        | 0.036            | Good        |
| GFI             | ≥ 0.90        | 0.986            | Good        |
| AGFI            | ≥ 0.90        | 0.957            | Good        |
| TLI             | ≥ 0.95        | 0.992            | Good        |
| CFI             | ≥ 0.95        | 0.996            | Good        |

Figure 3 – Service quality model before being modified
Table 3 – Goodness of Fit on Modified Service Quality

| Goodness of Fit | Cut off Value | Estimate Results | Description |
|-----------------|---------------|------------------|-------------|
| Chi square      | ≥ 0.05        | 0.786            | Good        |
| Significance    | ≤ 2.00        | 0.240            | Good        |
| RMSEA           | ≤ 0.08        | 0.000            | Good        |
| GFI             | ≥ 0.90        | 0.999            | Good        |
| AGFI            | ≥ 0.90        | 0.993            | Good        |
| TLI             | ≥ 0.95        | 1.008            | Good        |
| CFI             | ≥ 0.95        | 1.000            | Good        |

Figure 4 – Service quality model after being modified

Figure 5 – Customer satisfaction model before being modified

Figure 6 – Customer satisfaction model after being modified
Table 4 – Goodness of Fit on Modified Customer Satisfaction

| Goodness of Fit  | Cut off Value | Estimate Results | Description |
|------------------|---------------|------------------|-------------|
| Chi square       | Kecil         | 25.731           | Good        |
| Significance     | ≥ 0.05        | 0.367            | Good        |
| CMIN/df          | ≤ 2.00        | 1.072            | Good        |
| RMSEA            | ≤ 0.08        | 0.019            | Good        |
| GFI              | ≥ 0.90        | 0.977            | Good        |
| AGFI             | ≥ 0.90        | 0.946            | Good        |
| TLI              | ≥ 0.95        | 0.997            | Good        |
| CFI              | ≥ 0.95        | 0.998            | Good        |

Figure 7 – Customer Loyalty Model before being modified

Figure 8 – Customer loyalty model after being modified

Table 5 – Goodness of Fit on Modified Customer Loyalty

| Goodness of Fit  | Cut off Value | Estimate Results | Description |
|------------------|---------------|------------------|-------------|
| Chi square       | Kecil         | 16.266           | Good        |
| Significance     | ≥ 0.05        | 0.062            | Good        |
| CMIN/df          | ≤ 2.00        | 1.807            | Good        |
| RMSEA            | ≤ 0.08        | 0.062            | Good        |
| GFI              | ≥ 0.90        | 0.979            | Good        |
| AGFI             | ≥ 0.90        | 0.934            | Good        |
| TLI              | ≥ 0.95        | 0.981            | Good        |
| CFI              | ≥ 0.95        | 0.992            | Good        |

The test results show that the majority of variables are normally distributed because the c.r. values are less than 2.58. However, in term of multivariate, it does not meet the normality assumption with a c.r. value more than 2.58. This phenomenon does not become a serious problem as stated by Bentler and Chou (1987) that the estimate technique in the SEM model
uses maximum likelihood estimation (MLE); even though the data distribution is not normal, it can still produce a good estimate, so that the data is feasible to be used in subsequent estimates. In addition, this research originates from primary data based on respondents’ answers that are very diverse. Therefore, it is difficult to obtain data that follows a multivariate normal distribution.

### Table 6 – Construct Reliability

| Variables       | Construct | SFL Square | Error [ε] | CR    | Cut off Value | Description |
|-----------------|-----------|------------|-----------|-------|---------------|-------------|
| **Brand Image** | CM8       | 0.487      | 0.513     | 0.865 | > 0.70        | Reliable    |
|                 | CM7       | 0.547      | 0.453     |       |               |             |
|                 | CM5       | 0.518      | 0.482     |       |               |             |
|                 | CM4       | 0.601      | 0.399     |       |               |             |
|                 | CM3       | 0.639      | 0.361     |       |               |             |
|                 | CM2       | 0.325      | 0.675     |       |               |             |
| **Service Quality** | Tangible | 0.846      | 0.154     |       |               |             |
|                 | Reliability | 0.933    | 0.067     |       |               |             |
|                 | Responsiveness | 0.393   | 0.607     |       |               |             |
|                 | Assurance   | 0.707      | 0.293     |       |               |             |
|                 | Empathy     | 0.479      | 0.521     |       |               |             |
| **Customer Satisfaction** | K1       | 0.558      | 0.442     | 0.878 | > 0.70        | Reliable    |
|                 | K2       | 0.668      | 0.332     |       |               |             |
|                 | K3       | 0.810      | 0.190     |       |               |             |
|                 | K4       | 0.491      | 0.509     |       |               |             |
|                 | K5       | 0.343      | 0.657     |       |               |             |
|                 | K7       | 0.248      | 0.752     |       |               |             |
|                 | K10      | 0.215      | 0.785     |       |               |             |
|                 | K11      | 0.241      | 0.759     |       |               |             |
|                 | K12      | 0.255      | 0.745     |       |               |             |
|                 | K13      | 0.490      | 0.510     |       |               |             |
| **Customer Loyalty** | L1       | 0.476      | 0.524     | 0.910 | > 0.70        | Reliable    |
|                 | L2       | 0.759      | 0.241     |       |               |             |
|                 | L3       | 0.496      | 0.504     |       |               |             |
|                 | L4       | 0.610      | 0.390     |       |               |             |
|                 | L5       | 0.465      | 0.535     |       |               |             |
|                 | L6       | 0.755      | 0.245     |       |               |             |
|                 | L7       | 0.584      | 0.416     |       |               |             |

### Table 7 – Normality test

| Variables       | Cut off value | C.R.  | Description |
|-----------------|---------------|-------|-------------|
| Empathy         | ± 2.58        | 1.2285| Normal      |
| Assurance       | ± 2.58        | .6805 | Normal      |
| Responsibility  | ± 2.58        | 2.8731| Not Normal  |
| Reliability     | ± 2.58        | 3.6143| Not Normal  |
| Tangible        | ± 2.58        | -.2177| Normal      |
| Loyalty         | ± 2.58        | .8896 | Normal      |
| Satisfaction    | ± 2.58        | 1.0580| Normal      |
| Brand Image     | ± 2.58        | -.4344| Normal      |
| **Multivariate**|               | 14.9539|            |

Outlier evaluations show that there is a Z-score that is less than -3. Therefore, it is concluded that there are univariate outliers. The amount of the eliminated data, because the value is less than -3, is 33 people. Therefore, the amount of data used for the next test is 217 people.

The results of multivariate outliers showed that the mahalanobis value was in the range of 3.608 to 108.089. The maximum value of the mahalanobis indicates a multivariate outlier because the value is more than 81.40. The data affected by outliers is 9 data. So, the 9th data must be omitted before analyzing to the next stage with the current data amount of 209 data.
The next test is to analyze Structural Equation Modeling (SEM) with a full model based on theory. The analysis of Structural Equation Modeling (SEM) was carried out using the AMOS 22.0 program with a composite model. It is because the chi-square value in the initial model is relatively high. The SEM results on the initial model proposed are as follows:

![Figure 9 – Structural Equation Modeling (SEM) Full Model](image)

**Table 8 – Goodness of Fit of Structural Equation Model**

| Goodness of Fit | Estimate Results | Cut off Value | Description |
|-----------------|------------------|---------------|-------------|
| Chi-square      | 190.628          | ≤ 2.00        | Marginal    |
| Cmin/DF         | 9.5314           | ≥ 0.05        | Marginal    |
| Probability     | 0.000            | ≥ 0.90        | Marginal    |
| GFI             | 0.852            | ≥ 0.90        | Marginal    |
| AGFI            | 0.733            | ≥ 0.95        | Marginal    |
| TLI             | 0.773            | ≥ 0.95        | Marginal    |
| CFI             | 0.838            | ≥ 0.95        | Marginal    |
| RMSEA           | 0.203            | ≤ 0.08        | Marginal    |

Analysis of structural equation modeling is intended to test models that have been developed based on theory simultaneously. Based on the results of the model feasibility test, the probability value is less than 5% which is equal to 0.000. It shows that there is a mismatch of the model so that it requires a modification of the model, even though the majority of the criteria have met the predetermined cut-off value.

From the initial full model, it was found that the population covariance variant matrix was not the same as the model of estimate covariance variant matrix so that modification of the model was carried out by correlating the residuals as follows:
**Figure 10 – Structural Equation Modeling (SEM) Full Model after being modified**

**Table 9 – Goodness of Fit of Modified Structural Equation Model**

| Goodness of Fit | Estimate Results | Cut off Value | Description |
|-----------------|------------------|---------------|-------------|
| Chi-square      | 14.787           | ≤ 2.00        | Good        |
| Cmin/DF         | 1.232            |               | Good        |
| Probability     | 0.253            | ≥ 0.05        | Good        |
| GFI             | 0.983            | ≥ 0.90        | Good        |
| AGFI            | 0.950            | ≥ 0.90        | Good        |
| TLI             | 0.994            | ≥ 0.95        | Good        |
| CFI             | 0.997            | ≥ 0.95        | Good        |
| RMSEA           | 0.033            | ≤ 0.08        | Good        |

The modification of the structural model results in a value decrease with a probability of 0.253 which is greater than 5%. Thus, the population covariant variant matrix that is the same as the estimated variant of the covariant model has been obtained. In addition to this probability value, all criteria have met the specified cut-off value. After getting the appropriate model, the significance of the model is obtained by comparing the probability value of each causality correlation with α (5%). The loading and significance values are presented in the following table:

**Table 10 – Regression Weight Structural Equation Model**

| Variables                      | Std Estimate | P-Value | Description         |
|-------------------------------|--------------|---------|---------------------|
| Customer Satisfaction ↔ Brand Image | -0.0686     | 0.045   | Not Significant     |
| Customer Satisfaction ↔ Service Quality | 0.8163     | 0.000   | Significant         |
| Customer Loyalty ↔ Customer Satisfaction | 0.7440     | 0.000   | Significant         |

**CONCLUSION AND SUGGESTIONS**

Brand image has a positive and not significant effect on customer satisfaction at Bank Jatim Syariah Surabaya; thus, H1 is rejected. Service quality has a positive and significant effect on customer satisfaction at Bank Jatim Syariah Surabaya; thus, H2 is accepted.
Customer satisfaction has a positive and significant effect on customer loyalty at Bank Jatim Syariah Surabaya; thus, H3 is accepted.

Based on the analysis results of the research that has been conducted, the following suggestions can be submitted:
1. STIE Perbanas Surabaya is expected to maintain the quality of its education which has produced graduates in management postgraduate program as a superior generation that benefits the people of East Java in particular and the Indonesian people in general;
2. For Bank Jatim Syariah recommended to maintain its service quality as a capital of success and as a provision and preparation in facing the spinoff of Conventional Bank Jatim. Bank Jatim Syariah Surabaya is advised to evaluate and record which equipment might not be able to keep up with the era so that they can be upgraded with more modern equipment. Bank Jatim Syariah Surabaya should be able to pay more attention to interior design/decoration at the banking hall and all transaction locations with customers to look more luxurious.

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EFFECTIVENESS OF THE USE OF DEMONSTRATION AND LECTURE METHOD, GROUP DISCUSSION AND LECTURE METHOD, AND LECTURE METHOD IN FOOD PROCESSING COUNSELING AT KARANGANYAR DISTRICT OF CENTRAL JAVA, INDONESIA

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ABSTRACT
The aim of this study is to analyze the level of knowledge, skills and changes in attitudes of members of farmer groups in processing food in Karanganyar Regency. Analyze the effectiveness of using demonstration and lecture method, group discussion method and lecture, and lecture method in food processing counseling. This study used a quantitative approach with a pure experimental method with a control group design with purwauji and purmaju (Nahartyo, E, 2012). The participants in this study were taken from the Jatipuro District, Karanganyar Regency in Jatisobo Village, Jatikuwung Village and Jatimulyo Village. The sampling was determined purposively as many as 108 people. The technique of collecting data was done through the implementation of pre-test, post-test, filling out questionnaire, and observation. The description of participants was about social conditions, the age of participants which was between 15 - 60 years old, the education level which begun from elementary to formal education level up to S1 (bachelor program), having a livelihood as employees, traders, farmers and IRT (Household). Jatipuro Subdistrict is a commodity development area for cassava which has increased production every year. There was a significant difference in the increase of knowledge between the first experimental group, the second experiment and the control group. Viewed from the average increase in knowledge in the experimental group with the discussion and lecture methods is higher than the increase in knowledge in the experimental group with demonstration and lecture, and the control group with the lecture method. Thus, the group which given the discussion and lecture method obtained a significantly higher increase in knowledge compared to the demonstration and lecture method, and the control group which was also with the application of the lecture method. The estimated linear regression model is good to be used to explain the increase of knowledge, improvement in skills and attitudinal change simultaneously influence the control of food production processes of home industry in the application of demonstration and lecture methods, discussion and lecture methods and the application of lecture method toward knowledge, skills and attitudes, they stimulataneously have a significant effect on the control of food production processes of home industry. In the application of demonstration methods and lectures, knowledge, skills and attitudes partially have no effect on the control of food production process of home industry. In the application of discussion and lecture methods, knowledge and attitude partially influence the control of food production process of home industry. The application of the lecture method on knowledge and attitude partially influence the control of food production process of home industry. The total of the influence of knowledge, skills and attitude toward the control of food production processes of home industry in the application of demonstration and lecture methods is positive. It means that at the time of increasing knowledge, improving skills and changing attitudes, so that the control of food production processes of home industry will increase. In the application of discussion and lecture method, the total of influence of
increasing skills and changing attitude has an increase of influence on the control of food production process of home industry. However, knowledge has negative value which means that any increase in knowledge has an effect on reducing the control of food production processes in home industry. In applying the lecture method, every time there is an increase in knowledge and changes in attitude, there will be an increase in the control of the process of food production in home industries. Every time there is an increase in skills, it will reduce the control of food production process in home industry. The relationship between the variables of knowledge, skills and attitude toward the control of the food production process in home industry shows that in the application of demonstration and lecture methods, discussion and lecture methods and the application of lecture method, the attitudinal changes have more significant positive effect. This means that if there is a change in attitude, the control of food production process in home industry will increase.

KEY WORDS
Knowledge, skills, attitude, demonstration, lecture method, discussion, lecture method.

According to the law of Republic of Indonesia Number 16 of 2006 concerning the extension system of Agricultural, Fisheries and Forestry, it is stated that agricultural, fishery, forestry extension, hereinafter referred to as extension, is a learning process for the main actors and business actors so that they are willing and able to help and organize themselves in accessing information market, technology, capital and other resources, as an effort to increase productivity, business efficiency, income, and welfare and increase awareness in preserving environmental functions.

According to Mardikanto (1993) agricultural counseling can be interpreted as a process of behavior change (knowledge, attitudes and skills) among the community (farmers), so that they know, want and are able to carry out changes in his farming in order to achieve an increase in production, income / profits and improvement of family / community welfare which want to be achieved through agricultural development. According to Van Den Ban, A.W. and Hawkins, H.S. (1998), the advantages of demonstration are the ability to see a new method to be put into practice. There is no need for high mutual trust between farmers and extension workers, because farmers can see for themselves everything clearly. According to Leeuwis (2009) demonstrating the results of certain practices is a strategy to increase awareness which is more useful than using visualization.

According to Van Den Ban, A.W. and Hawkins, H.S. (1998), group discussion is a very important extension method, because it provides an opportunity to influence the behavior of participants. The role of group discussion can be viewed from things that can increase knowledge, change attitudes, and change behavior. According to Mardikanto (1993), as an extension method this discussion method is very effective for exchanging information for each participant. Therefore it is very effective to improve knowledge, attitude, even if carried out in the field or with the help of certain equipment can also improve target skills. So that this method is very effective for the target at the stage of assessing and trying. As for the conscious and interest stages, it is considered inefficient because it only reaches relatively limited targets.

According to Van Den Ban, A.W. and Hawkins, H.S. (1998), lectures or speeches are important tools to transfer information in counseling. In addition, the relatively higher per capita costs (compared to mass media) lecture or speeches have several distinctive advantages as follows: lecturers can change the content of their speeches according to both the needs and interests of the audience and their level of education, lecturers can pay attention to the audience's responses when speaking and can immediately change his approach, the audience can find out the speaker better and get a clear impression about the topic of conversation through the gestures and expressions on his face.

The production data which obtained from BPS Karanganyar Regency (2015) found cassava production increased every year. In 2012 there was a production increase of 5,646 tons or an increase of 1.05% from 2011 production of 103,179 tons. In 2013 the production increase was 6,864 tons or an increase of 1.06%. 2014 increased by 127,990 tons or
increased by 1.11%. In 2015 there was an increase in production of 18,419 tons from production of 146,409 tons or an increase of 1.14%. This shows that the development of food processing oriented to local food such as cassava has a good opportunity to be developed. One of processed cassava is Mocaf (Modified Cassava Flour) which is a modified product as the latest processed product of cassava. Karanganyar Regency has the potential to develop cassava. Post-harvest handling and yield processing must be carried out immediately because cassava production is easily damaged. Processing of mocaf flour (modified cassava flour) is a good alternative for processing cassava production. Besides as alternative flour to meet the need for wheat flour in the community, the results of processed mocaf flour can meet the needs of other food industries. It is hoped that with the presence of mocaf flour, food products that have high quality and selling value will be obtained and can be made as regional superior products.

The problem that faced so far is that there is an increase in cassava production every year but the production results have not been further processed as processed products that have high selling value. Farmers still sell their products directly so that the results of production cannot increase their income. Processed cassava products in the form of Mocaf (Modified Cassava Flour) which began to be cultivated actually can increase farmers’ income. Independent business in the agricultural sector can be carried out by cultivating agricultural products to be more productive and have a high selling value. Through the efforts of processing agricultural products that are oriented on the development of local products, the results of agricultural production are sold in raw form and also they are processed further into creative processed products. Through counseling methods in the form of demonstration, lecture and group discussion, farmer groups can provide knowledge about yield processing technology, which can provide innovation in agricultural products so that there will be many interpreuners in the field of processing agricultural products. The role of agricultural extension agents is to help providing information about technology which is very necessary.

The purpose of this study was to analyze the level of knowledge, skills and changes in attitude of members of farmer groups in processing food in Karanganyar Regency. Analyzing the effectiveness of using demonstration and lecture methods, group discussion and lecture method, and lecture method in food processing counseling. The benefit of this research is to be able to provide information about the effectiveness of the demonstration and lecture methods, group discussion and lecture methods, and lecture method in food processing counseling and at the same time to provide references for further research. Providing information to the Karanganyar District Government to facilitate the efforts of processing agricultural products which based regional through the support of agricultural extension programs, increasing the agricultural extension resources, and developing extension methods effectively.

METHODS OF RESEARCH

This study used real experimental method with the form of a control group design through purwauji and purmauji with descriptive statistical analysis and inferential statistics which analyzed using multiple linear regression. In this design, three groups were used, two groups for the experiment, one group that was treated with demonstration and lecture methods, one group was treated with discussion and lecture methods, and one group for the control group, namely the group which give lecture method. The location of this research was in Jatipuro Subdistrict, Karanganyar Regency in three villages, namely Jatimulyo Village, Jatikuwung Village, Jatisobo Village. The study was conducted in July 2018. The total of participants were 108 people with purposive sampling techniques. Validity and reliability tests were carried out on 30 non-sample people Jatimulyo village, Jatikuwung Village, Jatisobo Village, Karanganyar Regency. The results which obtained were the value of r count (0.364–0.923), it was higher than the r value of the table (0.361), it can be concluded that all statements were valid and cronbach alpha values was (0.883 - 0.935), these results indicated that the questionnaire, pre-test, post-test, observations in this research were
It was stated in the attachment of the Regulation of the Minister of Agriculture No. 52/Permentan/OT.140/12/2009 concerning the Agricultural Extension Method that agricultural extension method is the method / technique of delivering counseling materials by agricultural extension agents to the main actors and businessman so that they know, want and are able to help and organize themselves in accessing market, technology, capital, and other resources as an effort to increase productivity, business efficiency, income and welfare, as well as raising awareness in preserving environmental functions. This method aims to accelerate and facilitate the delivery of materials in its implementation, improve the effectiveness and efficiency of the implementation and implementation of agricultural counseling, accelerate the process of adopting agricultural technology innovations. Demonstration is a demonstrating of a technology (material, tool or method) and or results of its implementation which carried out by a demonstrator to the main actors and business actors. Lecture is a medium for delivering information verbally to the main actors, business people and / or community leaders in a meeting. Group discussion will have interactions between groups and communicators, so that it will influence the behavior of the participants of discussion. The role of group discussion in the delivering of technological innovations will increase knowledge, skills and attitude changes.

The extension method which applied to those three experimental groups namely demonstration and lecture methods which were applied to the Women Farmers Group in Jatimuulo Village, the second experimental group was applied Ngudi Rahayu II Farmer Group in Jatikuwung Village, while the experimental group as the control group was the Srikandi Joint Business Group in Jatisobo Village. Those three groups have processed the results of cassava. However, the results of processed products can not be able to become the main source of income, it is because the quality of the products which produced does not have high selling value yet, and processing work is additional work. It is expected that the application of extension methods will increase knowledge, skills and changes in the attitude of members of farmer groups.

The results of the analysis of participant characteristics (Table 1) indicate that most participants belong to productive age, with variations in age between 22 years and 65 years. The results showed that more than 67 percent of participants were in the age (30-39 years) up to (40-49 years). This condition shows that physically participants are still strong in carrying out their farming. According to Siagian (2012) age is related to technical maturity and psychological maturity. Increasing age shows the level of technical maturity, which means increased skills in carrying out tasks, experience in carrying out certain tasks continuously for a long time, it usually increases technical maturity. Psychological maturity shows that the older people are expected to be able to show mental maturity, the more wise, able to think rationally, to be able to control emotion, to tolerate views and behaviors that are different from their own point of view and behavior, and to be able controlling emotion. According to Soekartawi (2005), the younger age of farmers usually has great enthusiasm and curiosity, so that adoption of innovation is faster. Age can also be associated with experience. According to Nurhardjjo (2012) the higher the age of the worker, the better the performance, because the level of expertise and skills is influenced by the experience gained while working.

The average formal education of participants is equivalent to completing elementary school. Most of the respondents attended elementary, middle and high school education. It is because of the economic constraints that they have to continue their education to a higher level, and the view of the community that formal education is not really needed if it is only to become a housewife. According to Siagian (2012) the dominant value in the culture of some countries showed that basically a place of woman is in the kitchen, which means that in many societies the role of women is primarily to take care of the household, not as a
breadwinner especially as the main breadwinner. The low level of formal education of participants causes their low ability to receive and manage the information provided. Suryani et al. (2017) said that the level of education determines a person's behavior and influences rational consideration in receiving information and decision making about technology.

Table 1 – The Distribution of Characteristics of Participants

| No | Individual Characteristics | Category | Total of people | Percentage (%) |
|----|---------------------------|----------|-----------------|----------------|
| 1  | Age (Year)               | Age (20-29 years old) | 18              | 16.7           |
|    | (Average = 2.6)          | Age (30-39 years old) | 34              | 31.5           |
|    | (Max= 65)                | Age (40-49 years old) | 33              | 30.6           |
|    | (Min=22)                 | Age (50-59 years old) | 15              | 13.9           |
|    |                          | Age (>60 years old)   | 8               | 7.4            |
| 2  | Formal Education (Years) | SD       | 43              | 39.8           |
|    | (Average = 1.9)          | SMP      | 39              | 36.1           |
|    | (Max= 5)                 | SMA      | 22              | 20.4           |
|    | (Min= 1)                 | D3       | 1               | 0.9            |
|    |                          | S1       | 3               | 2.8            |
| 3  | Profession               | IRT      | 41              | 38.0           |
|    | (Average = 2.3 tahun)    | Farmer   | 23              | 21.3           |
|    | (Max= 5)                 | Private  | 12              | 11.1           |
|    | (Min= 1)                 | Trader/Entrepreneur | 31           | 28.7           |
|    |                          | Employee | 1               | 0.9            |

Table 2 – Summary of T-Test Analysis Results between Data (Gain/Delta Score)

| Group        | Mean | Std. Deviation | thitung (tcount) | p    | Description  |
|--------------|------|----------------|------------------|------|--------------|
| 1st Experiment | 32.41 | 9.97           | 19.50            | 0.000| significant  |
| 2nd Experiment | 34.99 | 9.07           | 23.159           | 0.000| significant  |
| Control      | 28.89 | 7.97           | 21.753           | 0.000| significant  |

Table 3 – Frequency Distribution of Changes in Knowledge Levels of Food Processing Group

| Knowledge Enhancement of Food Processing Groups | Classes | 1st Experiment | 2nd Experiment | Control |
|------------------------------------------------|---------|----------------|----------------|---------|
|                                                | f      | %             | f             | %       | f     | %       |
| Pre-test                                       |        |               |                |         |       |         |
| • Bad Category                                |        |               |                |         |       |         |
| Very Low                                      | 9      | 25            | 13             | 36.1    | 10    | 27.8    |
| Low                                           | 21     | 57.3          | 19             | 52.7    | 22    | 61.1    |
| Total                                         | 30     | 82.3          | 32             | 88.8    | 32    | 88.9    |
| • Good Category                               |        |               |                |         |       |         |
| High                                          | 6      | 16.7          | 4              | 11.1    | 4     | 11.1    |
| Very High                                     | 0      | 0             | 0              | 0       | 0     | 0       |
| Total                                         | 6      | 16.7          | 4              | 11.1    | 4     | 11.1    |
| Whole total of pre-test                       | 36     | 100           | 36             | 100     | 36    | 100     |
| Post-test                                     |        |               |                |         |       |         |
| • Bad Category                                |        |               |                |         |       |         |
| Very Low                                      | 0      | 0             | 0              | 0       | 0     | 0       |
| Low                                           | 2      | 5.6           | 1              | 2.8     | 2     | 5.6     |
| Total                                         | 2      | 5.6           | 1              | 2.8     | 2     | 5.6     |
| • Very Good                                   |        |               |                |         |       |         |
| High                                          | 14     | 38.9          | 18             | 50.1    | 23    | 63.9    |
| Very High                                     | 20     | 55.5          | 17             | 47.3    | 11    | 30.6    |
| Total                                         | 34     | 94.4          | 35             | 97.4    | 34    | 94.5    |
| Whole total of post-test                      | 36     | 100           | 36             | 100     | 36    | 100     |

From the results of the analysis as seen in the table above, it can be described as follows: There was a significant difference in the increase in knowledge between the first experimental group, the second experiment group and the control group. The group which given the discussion and lecture method gained a significantly higher increase in knowledge compared with the experimental group with the demonstration and lecture method and the control group which was treated with the lecture method.
From table 3, it can be seen that in the experimental group with the application of discussion and lecture methods on the pre-test treatment, there were as many as 36 people whose had the percentage of knowledge enhancement 97.4% from the bad category to the good category. The effectiveness of the application of discussion counseling method refers to Mardikanto (1993), as an extension method, discussion method is very effective for exchanging information to each participant. Because it is very effective to increase knowledge, attitude, even if it were carried out in the field or with the help of certain equipment, it could also improve the target skills. And according to Van Den Ban, A.W. and Hawkins, H.S. (1998), lecture or speech are important tools to transfer information in counseling. The application of these two extension methods could simultaneously increase the knowledge of members of the food processing group. It can be seen that the number of members of the food processing group who experienced knowledge enhancement from the very low category of 88.8% increased to a good category of 97.4%.

Table 4 – Summary of T-Test Analysis Results between Data Groups Skill Improvement (Gain / Delta Score)

| Groups      | Mean | Std. Deviation | thitung (tcount) | p     | Distribution |
|-------------|------|----------------|------------------|-------|--------------|
| 1st Experiment | 14.11 | 1.17          | 72.635            | 0.000 | significant  |
| 2nd Experiment | 14.72 | 2.39          | 37.025            | 0.000 | significant  |
| Control     | 13.42 | 1.59          | 50.553            | 0.000 | significant  |

From the results of the analysis as seen in the table above, it can be described as follows: There was a significant difference in the improvement of skills in the first experimental group continued with the second experiment and the control group. It was indicated by thitung (tcount) = 72.635 with p = 0.000 which means that there is a significant difference in the increase in skills with the application of demonstration and lecture method.

Table 5 – The Frequency Distribution of Changes in the Levels of Skill Enhancement of Food Processing Group

| Classes | 1st Experiment | 2nd Experiment | Control |
|---------|---------------|----------------|---------|
| Observation before Treatment |
| • Bad Category |
| Very low | 0 | 0 | 23 | 64 |
| Low | 30 | 83.5 | 13 | 36.1 | 6 | 16.8 |
| Total | 30 | 83.5 | 36 | 100 |
| • Good Category |
| High | 6 | 16.70 | 0 | 0 | 0 |
| Very High | 0 | 0 | 0 | 0 |
| Total | 6 | 16.70 | 0 | 0 | 0 |
| The total of observation before Treatment | 36 | 100 | 36 | 100 | 36 | 100 |
| Observation after Treatment |
| • Bad Category |
| Very low | 0 | 0 | 0 | 0 | 0 |
| Low | 0 | 0 | 5 | 14 | 16 | 44.5 |
| Total | 0 | 0 | 5 | 14 | 16 | 44.5 |
| • Good Category |
| High | 11 | 30.6 | 28 | 77.9 | 19 | 52.9 |
| Very High | 25 | 69.6 | 3 | 8.4 | 1 | 2.8 |
| Total | 36 | 100 | 36 | 86.4 | 36 | 55.7 |
| The total of observation after Treatment | 36 | 100 | 36 | 100 | 36 | 100 |

From table 6 above, it can be seen that in the experimental group, the application of demonstration and lecture methods based on the observations before treatment, there were 36 people from bad category (low) and 30 people with good category (high), and the rest were 6 people. After being treated with demonstration and lecture methods, there were 36 skills increased. Or it can be said that the percentage of skill improvement was 100% from
bad category to good category. For food processing groups which given discussion and lecture method, the percentage of skill improvement was 86.4% from the bad category to good category, while the food processing group which was given the lecture method, the percentage of knowledge enhancement was 55.7% from the bad category to good category. The effective application of extension methods according to Mardikanto (1993), demonstration method, is often seen as the most effective method because this method is in accordance with the saying "seeing is believing" which can be interpreted as "by seeing, we believe" or believe in seeing and according Van Den Ban, AW and Hawkins, H.S. (1998), lecture or speeche are important tools to transfer information in counseling. The application of these two extension methods can simultaneously increase the knowledge of members of the food processing group. This can be seen from the number of members of the food processing group who experienced an increase in skills from the very low category 83.5%, increased to a good category of 100%. In the application of demonstration and lecture methods, the Adjusted R-Square value was 0.312 or 31.2%. The application of discussion and lecture methods with the value of Adjusted R-Square was 0.600 or equal to 60% while in the application of lecture method, the value of Adjusted R-Square was 0.237 or equal to 23.7%. The control of food production process of home industry can be explained by using variables of the increase of knowledge, skills and changing attitudes in the application of discussion and lecture methods. While the rest must be explained by outside factors of this regression model.

Table 7 – The Results of Partially Regression Test of the application of Extension Methods that Influence the Level of knowledge, skills and changes in attitude

| Sub Change | β   | t-hit | Sig  |
|------------|-----|-------|------|
| 1. The application of demonstration and lecture methods |     |       |      |
| (constant) | -20,530 | -607 | .548 |
| Knowledge | .286 | 1,539 | .134 |
| Skill | 1,214 | 1,939 | .061* |
| Attitude | .339 | 1,680 | .103 |
| 2. The application of discussion and lecture methods |     |       |      |
| (constant) | 21,749 | .892 | .379 |
| Knowledge | -.336 | -2,973 | .006* |
| Skill | .130 | .460 | .649 |
| Attitude | .724 | 5,255 | .000* |
| 3. The application of lecture method |     |       |      |
| (constant) | 27,690 | .975 | .337 |
| Knowledge | .251 | 1,883 | .069 |
| Skill | .430 | -1,347 | .187 |
| Attitude | .537 | 3,048 | .005* |

a. Dependent Variable: The Control of food production process of IRT (Household).

In the group which treated by demonstration and lecture methods, increased skills and changing attitudes did not significantly influence the control of food production processes of home industry. Increased skills significantly influence the control of food production process in home industry. In the application of demonstration and lecture methods, participants were taught directly how to process good food so that the production had high selling value and could improve participants' skills in producing food. Materials and processing methods were delivered in stages and practiced directly by participants. The lecture delivered was applied together with demonstration method, the delivery of messages to participants could improve their skills in processing food. The lecture method, even though it is considered a weak method but after being combined with the demonstration method, it will achieve the purpose of counseling. Like the opinion of Van Den Ban, A.W. and Hawkins, H.S. (2017), they stated that the demonstration method teaches farmers certain skills. Farmers are given the opportunity to practice things that have been taught and get feedback from the instructor about their abilities. The lecture method is transferring information in counseling. In delivering lecture, lecturers can pay attention directly to the responses of participants when speaking and can change the way or the approach in delivering of material.
In group which treated with discussion method and lecture, increased knowledge and changing attitude significantly influence the control of food production process in home industry. Through discussion and lecture method, the delivery of material to participants can influence the behavior of participants in food processing. In the application of discussion and lecture method, it can help participants to add knowledge, clarify new information that participants have known and communicate directly about food processing. Changes in the attitude of participants in processing food will affect the quality of their products. A conscious attitude toward the lack of knowledge in processing product and the willingness to change attitude in managing their business production will provide good results from their processed products. It relates with the opinion of Van Den Ban, A.W. and Hawkins, H.S. (2017) that lecture which followed by discussion are used to focus the attention of the masses on a problem. Group discussion helps the process of transferring technology to groups, integrates knowledge by providing opportunities to ask questions, renew views and fulfill several functions in the process of changing attitude.

In the group which given the lecture method, changes in attitude have a significant effect on controlling the food production process of homemade food industry. The lecture method conveyed the problem of processing the results faced by participants. The lecture delivered by food experts with material processing results and can inspire participants to change their attitude to process food according to the production stages. Submission of material with audiovisual displays material with concise and interesting images can encourage participants to listen well. Participants who were all female, in listening to the lecture about food processing, it attracted their attention. Participants in accepting materials are more subjective, friendly, sympathetic and easily influenced. According to Tarigan (2015) each person will tend to listen carefully to the topic or subject of the discussion he agreed to. When listening to something valuable from the conversation, they will be eager to listen to the materials diligently and thoroughly.

Table 8 – The Results of Simultaneously Regression Test and the application of Extension Methods that influence the level of knowledge, skills and changes in attitude

| Sub Change                                    | F      | Sig.  |
|-----------------------------------------------|--------|-------|
| 1. The application of demonstration and lecture methods | 6,289  | .002* |
| 2. The application of discussion and lecture method   | 18,515 | .000* |
| 3. The application of lecture method             | 4,632  | .008* |

*a. Predictors: (Constant), Change of Attitude, Increased Knowledge, Skill Improvement;  
b. Dependent Variable: The Control of the production process of IRT (Household).

In groups which treated with demonstration and lecture methods, discussion and lecture methods and lecture method, it can be concluded that the estimated linear regression model was used to explain the effect of changes in attitude, knowledge enhancement, and skill enhancement I the food processing group. Or it can be concluded that the application of demonstration and lecture methods, discussion and lecture methods and lecture method jointly influence the control of food production process of homemade food industries in the application of the lecture method.

CONCLUSION AND RECOMMENDATIONS

The group which was with the demonstration and lecture method gained a significant difference in skills improvement. The group which given the discussion and lecture method gained a significantly higher increase in knowledge than the experimental group which was with the demonstration and lecture methods and the control group which was with the lecture method.

The application of demonstration and lecture methods, discussion and lecture methods and lecture method in increasing knowledge, improving skills and changing attitude together have an effect on controlling the food production process of food of home industry.
Groups which were treated with demonstration and lecture methods, increased skills and changing attitude did not significantly influence the dependent variable, controlling the process of food production of home industry. In groups which were treated with discussion and lecture methods, the increased knowledge and attitude change had a significant effect on the control of the food production process of household industry while in groups given the lecture method, changes in attitudes have a significant effect on the control of food production process of home industry.

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ANALYSIS OF THE EFFECT OF PRODUCTION, PROMOTION AND DISTRIBUTION COSTS TOWARDS COMPANY’S SALES OF THE FAST MOVING CONSUMER GOODS SECTOR

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ABSTRACT
The purpose of this study is to analyze the influence of production costs, promotion costs, and distribution costs partially on the value of sales and analyze the influence of production costs, promotion costs, and distribution costs together on the value of sales. Consumer goods companies are closely related to the increasing consumption of society. The sector involves a large amount of labor compared to other industries. Therefore, cost control is needed by the company to regulate the availability of funds so that it is sufficient to finance operational activities. The sampling method in this study was purposive sampling or judgment sampling. The research data are panel data consisting of time series data and cross section. The time series data used is company data for 2012-2016. The cross section data consists of 23 consumer goods sector companies listed on the Indonesia Stock Exchange. There are four variables in this study, namely the independent variable consists of variable production costs, promotion costs, and distribution costs, while the dependent variable is the sales variable. Processing and technical data analysis in this study is descriptive statistical analysis, panel data, and model suitability tests using SPSS and Eviews software. Based on the results of the analysis using the panel data regression equation the results of the best method are obtained by the Fixed Effect Model. Based on the results of the analysis using a fixed effect model, the consumer goods company promotion and distribution variables have a significant influence on the value of sales. The company must have a supervision and quality control department that works in every production process. In the consumer goods sector companies that are directly related to consumers, they can directly carry out promotions through advertisements in electronic media and print media. The increasing growth of internet users can also be an opportunity for marketing channels. By utilizing the internet, companies can create e-commerce platforms to reach wider consumers.

KEY WORDS
Production costs, promotion costs, distribution costs, company’s sales.

Companies are required to be able to seize the market and compete with other companies, so that each company must be able to develop appropriate management activities. Companies need to pay attention to what consumers need and want to be able to improve product quality, provide facilities that are beneficial to consumers and increase consumer confidence in the quality provided by the company (Wardhani 2015).

One of the activities carried out by a company is to compile a budget. Costs become a very important part of the company; one of the most important cost components is production costs, promotion costs and distribution costs. These costs are factors that influence the determination of selling prices. Production costs are costs associated with transforming raw materials into a product (World 2018). Raw materials are closely related to the amount of production costs incurred, the increase in production can be done by increasing good industrial raw materials. Production cost efficiency and high profit margins can be obtained from the acquisition of cheaper raw materials. (Fachrodi 2009). This fee is related to determining the selling price of the product based on the cost of production. Pricing is also included in the marketing strategy, namely by setting competitive prices and adjusting prices with the benefits obtained (Marwa 2014).
Promotional costs are costs sacrificed or issued by the company in carrying out marketing activities. The total promotional costs are the sum of all costs incurred by the company when the company promotes various kinds of promotional tools, such as advertisements, and exhibitions (Rustami et al. 2014). Advertising that is persuasive (persuasive advertising) by advertising the advantages ranging from benefits, saving time, costs, and practicality to be obtained (Heviandri 2009). Repeated ad impressions are expected to increase purchasing power of products offered by producers (Sumarwan 2012). In other studies, repeated advertisements cause consumers to get bored and can react negatively to advertisements (Sumarwan 2011). One of the goals of advertising is to become a top of mind product. Top of mind describes the brand that is first remembered by consumers or is first called when asked about a product (Sumarwan 2010). Marketing activities can also be done with education and training, improving the quality of product distinctiveness, and product diversification (Saviti 2014).

Promotions also need to be supported by good product distribution or distribution. According to Ardiyos (2008) distribution costs are costs for warehousing, transportation, packing, exporting facilities to put into crates. The distribution channel or often referred to as the marketing channel is a path that must be passed by the flow of goods from the producer to the intermediary to the consumer. To support the affordability of product access, it is necessary to select retailers who are closer to consumers and require marketers to sell directly to consumers (Oktoriyana 2014). Timely distribution or shipping is one guarantee of customer satisfaction (Manalu 2007). Therefore, the selection and use of an effective distribution channel is needed so that the delivery of goods can be done easily and quickly. The chosen distribution channel will then influence the decision on the selling price of a product. (Munawar 2008).

Distribution channels are used by companies to determine how and where consumers will make the purchase process. Purchasing is the final goal of the stage of need recognition, alternative information seeking and evaluation. In carrying out the purchasing process, consumers make decisions about the brand, place of purchase, consideration in choosing the place, place of purchase, consideration in choosing the place, and how consumers decide on purchases (Sumarwan 2013).

The final result of the achievement of a company from the sale of the product produced is called the company's sales. The company’s sales are achievement expressed quantitatively in terms of physical or volume or unit of a product. The value of sales and cost control are important factors in the company which can also affect company profits.

Sari (2015) in his research entitled The Effect of Promotion Costs and Distribution Costs on Sales (Study of Food and Beverage Sector Companies Listed on the Indonesia Stock Exchange for the Period 2009-2013). The results of the study stated that promotion costs and distribution costs simultaneously had a significant influence on sales. Partially promotion costs have a significant effect on sales and distribution costs have a significant effect on sales.

According to Wardani (2013) in his thesis which examined the effect of production costs, promotion costs, and distribution costs on company’s sales in the consumer goods industry, all variable components free of production costs, promotion costs, and distribution costs proved to significantly affect the company’s sales of investment companies, foreign and domestic investment. Based on this background, the purpose of this study is to analyze the effect of production costs, promotion costs, and distribution costs on the sales of consumer goods sector companies listed on the Indonesia Stock Exchange either partially or simultaneously.

**LITERATURE REVIEW**

Production is the activity of the company processing and converting raw materials into finished goods. According to Nasution (2003) states that the production process is a method and techniques used in processing raw materials into finished products. Costs associated with making goods and providing services are called production costs (Hansen, Mowen
2006). The elements of production costs can be grouped into three, namely raw material costs, labor costs, and factory overhead costs.

According to Kotler (2008), marketing is a social and managerial process where individuals and groups obtain what they need and want through the creation and exchange of products and values with other parties. The marketing concept states that the key to creating shareholder value is to build relationships with target consumers based on satisfying their needs more efficiently than competitors (Sumarwan 2009).

The marketing concept states that the key to achieving organizational goals depends on determining the needs and desires of the target market and giving desired satisfaction more effectively and efficiently than those of competitors. Some of the objectives of a marketing system are maximizing consumption, maximizing customer satisfaction, maximizing choices, and maximizing quality of life (Kotler 1994).

Promotion is related to communication activities to influence other people to accept ideas, concepts, and other things. According to Hermawan (2012) promotion is one of the priority components of the activity of telling consumers that the company launches new products that make consumers carry out purchasing activities. The more promotion is carried out, the greater the promotion costs, the greater the promotional costs are incurred, the sales will rise. In promotional activities a company requires costs to increase sales. The promotion costs represent a number of funds that the company disbursed into promotions to increase sales (Simamora 2002).

Promotion can be said as marketing communication, namely communication activities carried out by buyers and sellers and is an activity that helps in decision making in the field of marketing and directs exchanges to be more satisfying by making all parties aware of doing better (Swastha 2008). According to Assauri (2009) promotion is an effort of the seller or producer in informing goods or services to buyers or consumers, so that buyers / consumers are interested in making purchase or exchange transactions for products or services sold or offered.

According to Kotler and Keller (2002) distribution channels are a group of companies or individuals who have ownership rights to products or help move ownership rights to products or services when transferred from producers to consumers. Good distribution requires collaboration in the supply chain, namely collaboration from all different activities and the existence of interrelationships in the supply chain. Successful collaboration allows the movement or distribution of goods in a timely manner from suppliers to manufacturers to the final consumer, and allows the company to maintain inventories at low inventories and at low prices (Anatan, Elitan 2008).

The functions of the distribution channel according to Kotler and Keller (2002) are:

- Information, which is collecting important information about consumers and competitors to plan and help exchange;
- Promotion, namely the development and dissemination of persuasive communication about the products offered;
- Negotiation, namely trying to agree on prices and other conditions, thus allowing the transfer of ownership rights.

Sales is the interaction between individuals meeting each other face that is intended to create, improve, control or maintain exchange relations so that it is beneficial for others (Swastha 2008). Sales volume is a measure that shows the amount or amount of goods or services sold (Mulyadi 2005). According to Kotler (2008) there are several factors that influence company sales, including:

- Selling price. The selling price factor is related to the affordability of consumers in consuming goods or services offered by the company;
- Products. The product is one of the factors that affect the level of sales volume, as the goods or services offered by the company whether it is in accordance with the level of needs of consumers;
- Promotion Fee. Promotion cost factor is a marketing activity that seeks to disseminate information, influence, persuade, and increase the target market of
companies and products to be willing to accept, buy, and be loyal to the products offered by the company;

- Distribution Channels. It is a company activity to deliver and distribute goods offered by the company to the consumers they aim for;
- Quality and quality of goods. With good quality, consumers will remain loyal to the products of the company, resulting in repeated purchases that have an impact on increasing the volume of product sales.

**METHODS OF RESEARCH**

The sampling method used in this study was a purposive sampling or judgmental sampling method. According to Sugiyono (2010), purposive sampling is a technique of determining research samples with certain considerations aimed at making the data obtained more representative. The statistical analysis method used is panel data regression method. Panel data is a combination of cross section data and time series data. Cross-section data is data collected in one time against many individuals. While time series data is data collected from time to time on an individual (Nachrowi 2006). The time series data used is annual data for five years, from 2012-2016, while the cross section is consumer goods sector companies listed on the Indonesia Stock Exchange. In this study there were 4 variables studied, namely:

- Production costs (X1). Production costs are costs which consist of direct labor costs, raw and supporting material costs, and company overhead costs;
- Promotion Costs (X2). Promotion costs are costs that consist of sales promotion costs and advertising costs;
- Distribution Costs (X3). Distribution costs are costs that consist of sales costs, shipping costs (transportation) and warehousing costs;
- Company’s Sales (Y). Company sales is a measure that shows the amount or amount of goods or services sold.

There are several techniques that can be used to estimate the parameters of the panel data:

- Pooled Least Square. The approach to using this method is the simplest method. In his estimation it is assumed that each individual unit has the same intercept. The panel regression data generated will apply to each individual;
- Fixed Effect Model. In the FEM method, interception in regression can be distinguished between individuals because each individual is considered to have its own characteristics;
- Random Effect Model. The REM method appears when there is no correlation between individual effects and regression. In this model, different parameters between individuals and between times are included in the error. In random effect models, there are two components that contribute to the formation of errors, namely individual and time, so random errors in random effect models also need to be parsed into errors for individual components, time component errors and combined errors.

To determine which best model that can be used, several tests are carried out, namely:

- Chow Test. Chow Test is a statistical test that aims to choose which model is better used between PLS or FEM models;
- Hausman Test. The Hausman test is a test conducted in choosing the use of the FEM or REM model;
- Langrange Multiplier test. The Langrange Multiplier test is a statistical test that aims to choose which model is better used between the REM or PLS models.

In the panel data regression model, it is necessary to fulfill the requirements, which are free from classical assumptions; several tests carried out include data normality test, multicollinearity test, autocorrelation test, and heteroscedasticity test. In addition, it is necessary to conduct a feasibility test to test the regression coefficients which have a significant influence or not. Tests carried out are F test, T test, and determination coefficient ($R^2$).
RESULTS AND DISCUSSION

The research data is obtained from the complete financial statements of each company for five years, in 2012, 2013, 2014, 2015, and 2016. Growth in production costs, pharmaceutical sector companies are the companies with the highest growth value. In 2012 the company experienced an increase in production costs by 63.44%. Decreasing production costs was experienced by household appliances sector companies with a decline of up to 26% in 2013. At promotional costs, the household appliances sector experienced a decline and drastic growth. In 2013 the household appliances sector company decreased by 75.32% and in 2015 the growth in promotional costs was 44.43%. The highest distribution costs are growth in the pharmaceutical sector companies by 28.5% while the companies that experience a decrease in distribution costs are companies in the household sector by 57.37%. The growth of sales value from each sector of the company has increased every year except in the household appliances sector. The biggest decline in the household appliances sector was recorded in 2013, which was 24% while the increase in the sales value of the largest companies was in the food and beverage sector in 2012 of 18.99%

Selection of the best model. When compared to the three methods of PLS, FEM, and REM can be seen based on the R-squared value. Obtained the R-squared value of the PLS method of 0.952197, the FEM method produces an estimate with R-squared of 0.997873 and uses the REM method to get the R-squared result of 0.860689. When comparing the three PLS, FEM, and REM methods, it can be seen based on the R-squared value, it can be seen that the FEM method gives significant results. The FEM method produces an estimate with R-squared of 0.997873 indicating the compatibility of the model between production costs, promotion costs, and distribution costs for sales. As much as 99.78% can be explained by variable production costs, promotion costs, and distribution costs, while as much as 0.22% is explained by other variables outside the model.

Table 1 – Estimation results using the PLS, FEM, and REM methods

|                  | Pooled Least Square | Fixed Effect Model | Random Effect Model |
|------------------|---------------------|--------------------|--------------------|
| coefficient      |                     |                    |                    |
| Production       | 0.548979            | 0.254574           | 0.325013           |
| Promotion        | 0.275498            | 0.188495           | 0.201800           |
| Distribution     | 0.163455            | 0.257387           | 0.263977           |
| Prob             |                     |                    |                    |
| Production       | 0.0000              | 0.0000             | 0.0000             |
| Promotion        | 0.0000              | 0.0000             | 0.0000             |
| Distribution     | 0.0000              | 0.0000             | 0.0000             |
| R-squared        | 0.952197            | 0.997873           | 0.860689           |
| Adjusted R-square| 0.950905            | 0.997276           | 0.856924           |
| Sum squared resid| 15.24339            | 0.678252           | 1.027565           |
| F-statistic      | 737.0084            | 1670.166           | 228.5931           |
| Prob (F-statistic)| 0.000000           | 0.000000           | 0.000000           |
| Durbin-Watson stat| 0.122312          | 1.708065           | 1.199502           |

Stage evaluation model. The Chow test showed that the F-test and chi-square results were significant. The resulting prob value is smaller than the significance level α = 5% (0.0000 <0.05) this means that the FEM method is better when compared the PLS method with a confidence level of 95%.

Table 2 – Results of the chow test and hausman test

|                  | Chow test | Hausman test |
|------------------|-----------|--------------|
| Prob. Cross-Section F | 0.0000   |              |
| Prob. Cross-Section Chi-square | 0.0000   | 0.0000       |
| d.f. Cross-Section F | 22,89    |              |
| d.f. Cross-Section Chi-square | 22       | 3            |
| Chi-Sq. Statistic  | 26,836775|              |
Then followed by a Hausman test to choose between the FEM and REM methods. In the Hausman test, the prob. value of 0.0000 is smaller than the 5% level, the best method that must be used is FEM. Based on the chow test and the best Hausman test model for this data is FEM (Fixed Effect Model).

Classical test assumptions. Normality test was carried out by Jarque Bera test. The panel data estimation results show a probability value of 0.243843 greater than the significance level value of 5%. So it can be concluded that the residuals distributed normally. In the test of Durbin Watson autocorrelation of 1.708065 between dl and 4-dU, there is no autocorrelation on the model. In heteroscedasticity test, it can be said that there is no problem of heteroscedasticity because the value of the sum squared resid weighted (0.659099) is smaller than the sum squared resid unweighted (0.700960). Multicollinearity test can be seen from the value of the correlation matrix between variables. From the correlation matrix, it can be seen that the correlation between production costs and distribution costs is quite high, but smaller than the R-squared value of 99.78%, so it can be concluded that there are no multicollinearity between independent variables. The coefficient of determination (R²) Based on the results of the FEM model, the R-Squared value is 99.78%, which means that 99.78% diversity Y can be explained by the independent variable (X) used while the remaining 0.22% is explained by factors others outside the model.

Goodness of fit panel data regression model. The F test is used to test the feasibility of the model and test the regression parameters simultaneously. On the results of the analysis of FEM model the value of Prob (F-statistics) of 0.000 <0.05 means that the model is feasible at a significance level of 5%. It can be indicated that at least one independent variable has a significant effect on the dependent variable. Based on the results of T test, all variables have a significant effect on Y. The cost of distribution has a significant effect on the level of 5% with an estimated coefficient of 0.257 which means that a one percent increase in the variable cost of distribution will increase Y by 0.257%. Production costs have a significant effect on the level of 5% with an estimated coefficient of 0.255, which means that if the production cost variable increases by one percent, Y will increase by 0.255%. Promotion costs have a significant effect on the level of 5% with an estimated coefficient of 0.189, which means that an increase of one percent in the variable cost of promotion will increase Y by 0.189%. The R-Squared value was 99.78%, meaning that 99.78% of the Y diversity was explained by the independent variable (X) used while the remaining 0.22% was explained by other factors outside the model.

Interpretation of the Model Effect of Production Costs on Company Sales. Model analysis on consumer goods sector companies, t-statistic value shows that the production cost variable has a t-statistic probability of 0.0000, which means the production cost variable has a positive influence on company sales because the t-statistical probability value is smaller than 0.05 (significance level of five percent). Production costs have a significant effect on the level of 5% with an estimated coefficient of 0.255, meaning that if the production cost variable increases by one percent, sales will increase by 0.255%.

Kotler's theory states that companies lower production costs with the aim of the company trying to set lower prices so that it can be more competitive in the market and increase sales. Production costs are needed to support the processing of raw materials into products that are ready to be marketed. Analyzing production costs is a way that can be done to determine the effectiveness and efficiency of production while maintaining product quality. One of the production costs is influenced by the effects of exchange rate fluctuations because some of the materials used in the production process are imported products.

Interpretation of the Model Effect of Promotion Costs on Company Sales. Model analysis on consumer goods sector companies, t-statistic value shows that promotion cost variable has a t-statistic probability of 0.0000, this means that promotion cost variables have a significant influence on company sales because the t-statistical probability value is smaller than 0.05 (significance level of five percent). Promotion costs have a significant effect on the level of 5% with an estimated coefficient of 0.189 which means that if the variable promotion costs increase by one percent then sales will increase by 0.189%. 

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In companies in the consumer goods sector, the more promotion carried out the greater promotional costs incurred, sales of these companies will also increase. Companies engaged in the consumer goods sector include companies that are active in promoting in the mass media, for example advertisements with various versions on television. Marketing activities or promotions carried out by companies in the consumer goods sector are included in the promotion above the line. Media chosen indirectly about consumers, central management makes efforts to form the desired brand. The nature of promotions above the line is limited to audience acceptance.

**Interpretation of the Model Effect of Distribution Costs on Company Sales.** Model analysis on consumer goods sector companies, t-statistic value shows the distribution cost variable has a t-statistic probability of 0.0000, this means that the distribution cost variable has a significant influence on company sales because the t-statistical probability value is smaller than 0.05 (significance level of five percent). Distribution costs have a significant effect on the level of 5% with an estimated coefficient of 0.257, which means that if the production cost variable increases by one percent, sales will increase by 0.257%.

The lack of distribution activities will affect the distribution costs. Companies in the consumer goods sector carry out a distribution strategy by creating an integrated distribution group. An extensive distribution network can ensure that the products that have been produced can be easily obtained by consumers. With this distribution group the company has access to reach outlets or retail in all regions of Indonesia. To further improve its service capabilities to be more efficient, it is necessary to increase the number of employees in various distribution areas.

**CONCLUSION**

The results of the analysis using the panel data regression equation using the FEM method, in the consumer goods sector, the variable cost of production, promotion costs, and distribution costs have a significant positive effect on the value of sales. Production costs must be controlled properly because they are directly in contact with the production process. By controlling production costs, the products produced can compete in the market because the cost of production is relatively lower so the company gets a profit. In addition, promotion costs also have a role in increasing the company’s sales. promotional costs are incurred to carry out marketing activities such as advertisements, discounts, and prizes. Promotion also needs to be supported by good distribution channels to reach scattered consumers.

**RECOMMENDATIONS**

The variables in this study are production costs, promotion costs, distribution costs, and company’s sales; the suggestion for further research is to add research variables such as selling prices and products produced in order to describe the company’s overall sales.

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THE INFLUENCE OF LIFE STYLE AND POSITIVE EMOTION ON IMPULSE BUYING AT JM SUPERMARKET PALEMBANG

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ABSTRACT
This study aims to determine: (1) the influence of Life Style on impulse buying on customers in the JM Supermarket of Palembang City; (2) the effect of positive Emotion on Impulse buying on customers at JM Supermarket in Palembang City; (3) the effect of Life Style and Positive Emotion on impulse buying for customers at JM Supermarket in Palembang City. Study uses primary data obtained by survey methods by distributing questionnaires that have been tested for validity and reliability. The population in this study were customers at JM Supermarket in Palembang City. The sampling technique uses random sampling method with a total sample of 120 people. The data analysis technique used is multiple linear regression. Life Style has a significant effect on impulse buying JM Supermarket in Palembang city. Positive Emotion significantly affects Impulse Buying in Palembang JM Supermarket customers.

KEY WORDS
Life style, positive emotion, impulse buying, customers.

Along with lifestyle changes, consumers will always try to meet their needs. Consumer behavior to meet their needs will be related to consumer behavior. Consumer behavior will appear due to planning or without prior planning (impulse buying). Today's consumer needs continue to change, which greatly influences changes in lifestyle patterns or lifestyle.

Life Style encompasses behavioral aspects related to multi-sensory, fantasy and emotional consumption that are controlled by benefits such as pleasure in using products and aesthetic approaches (Rachmawati, 2009). According to Hausman (2000) the value of hedonic plays a significant role in impulse buying. Consumers as purchasing decision makers or influential in the decision making process need to be understood in order to generate Impulse Buying phenomena in order to increase sales. To be able to bring up the impulse buying phenomenon, marketers must know the factors that influence consumers in impulse buying. Factors that cause impulse buying include excessive consumption and positive emotions (Amiri et al., 2012). At present most consumers in Indonesia are more recreational oriented when.

The rapid development of JM Supermarket has an impact on human behavior. At this time in human behavior there has been a shift in behavior (behavior change). The behavior of people who are planned is unplanned or impulse buying. This situation is seen in the situation of JM Supermarkets that provide goods that can meet their needs (consumers) and provide benefits for them financially. They forget the purpose when they enter the shop as they should. This phenomenon occurs in the Palembang City JM Supermarket which provides many outlets in it and offers various consumer goods. Along with the development of Palembang City as one of the big cities and is expected to develop into a Metropolitan city, the existence of a comfortable and modern economic facility is a necessity for visiting citizens and tourists. Following the demands of these needs, in Palembang City also grew and developed one of them JM Supermarket. JM Supermarkets are centers that have one or more major department stores as the attraction of small retailers and restaurants with
building typologies such as shops that face the main corridor of the JM Supermarket or pedestrian which is the main element of a center (JM Supermarket), with functions as circulation and as a communal space for the interaction between visitors and merchants (Maitland, 1987).

Based on the results of prasurvey observations, researchers can conclude that lifestyle greatly influences consumers' thinking patterns about meeting their needs. Consumers with a lifestyle will tend to be happy with everything that is luxury without thinking about prices and budgets, including in this case the purchase of fashion products. Based on the observations of researchers, showing consumers who are very easy to spend money to shop, usually will often make purchases beyond what they had planned before.

LITERATURE REVIEW

An understanding of consumer behavior and the consumption process will produce a number of benefits including helping managers to make decisions, providing basic knowledge for researchers in analyzing consumers, and helping consumers make better purchasing decisions (Dwiastuti, et al., 2012). Consumer behavior is the buying behavior of end consumers, both individuals and households, who buy products and services for personal consumption (Kotler and Armstrong, 2012). Consumer behavior is an action that is directly involved to get, consume, and spend products and services, including the decision process that precedes and follows this action (Simamora, 2008).

According to Lisda (2010) impulsive buying (impulse buying) is the process of buying an item, where the buyer has no intention to buy before, it can be said without a planned purchase or instant purchase. Whereas according to Mowen and Minor (2002) impulse purchase is an act of buying that was not previously recognized consciously as a result of a consideration, or buying intention that was formed before entering the store. It is clear by the opinion of Rook and Fisher (1995) that impulsive buying is defined as the tendency of consumers to buy spontaneously, reflexively, suddenly, and automatically. It can be said that impulse buying is a natural and fast reaction.

Sutisna (2002) explains that impulsive purchases occur when consumers take sudden purchase decisions. The drive to make purchases is so strong that consumers no longer think rationally about their purchases. According to Park (2006) impulsive purchases often appear suddenly, quickly, spontaneously, more toward emotional rather than rational, more often regarded as something worse than something good, and consumers tend to feel "out-of-control" when buying goods impulsively. In line with the opinion expressed by Schiffman and Kanuk (2007) that impulsive buying is an emotional decision or according to the insistence of the heart. Emotions can be very strong and apply as the basis for a dominant purchase motive.

Lifestyle refers to how a person lives, how they spend their time and money, their purchasing activities, their attitudes and opinions about the world in which they live (Kotler and Keller, 2012). A person's lifestyle can be shown by looking at his opinions on a particular object. A person's lifestyle is a pattern of life in the world that is expressed by one's activities, interests, and income. Lifestyle is defined as the behavior shown by the customer in connection with a series of personal responses and opinions about product purchases (Tirmizi, 2009). The way we shop reflects status, dignity and habits. Lifestyle shows the way a person chooses to allocate income, both in terms of fund allocation for various products and services, and certain alternatives in differentiating similar categories (Japarianto, 2010).

Emotions which include feelings and moods (mood) are important factors in making decisions by consumers (Park, Kim, & Forney, 2006). Emotions can be divided into two dimensions, namely positive and negative. Positive emotions can be seen through positive feelings such as happy, loving, liking, enjoying, satisfied, and alert.

Positive creation emotion to consumers about a product or article or even the store environment can improve consumers' motives in impulse buying. According to Peter and Olson (2005) states that the main store atmosphereter involves affection in the form of emotion in a store that is possible without being fully realized by the customer while.
The basic model underlying Donovan and Rositter's research, is taken from the environmental psychological literature. Basically, the model states that environmental stimuli affect the emotional status of customers, which in turn will influence behavior or become a customer. Approaching behavior is a movement towards and avoidance behavior is a movement away from various kinds of environment and stimuli.

**METHODS OF RESEARCH**

This study uses multiple linear regression analysis techniques, to test whether there is a relationship between the independent Life Style ($X_1$), Positive Emotions ($X_2$) independent variables, and Impulse Buying ($Y$) dependent variable. The regression equation in this study is as follows:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + e$$

Where: $A =$ Constanta; $\beta_1 \beta_2 =$ Variable Regression Coefficients $X_1$ and $X_2$; $X_1 =$ Life Style; $X_2 =$ Positive Emotion; $Y =$ Impulse Buying; $e =$ Standard error.

**DISCUSSION OF RESULTS**

Regression models do not experience multicollinearity disorders, this can be seen in the tolerance value of each variable greater than 10 percent (0.1). VIF calculation results also show that the VIF value of each variable is less than 10. So it can be concluded that there is no multicollinearity between the independent variables in the regression model. The following table shows the results of multicolinearity tests:

| Variable       | Tolerance | VIF  |
|----------------|-----------|------|
| Life Style     | 0.970     | 1.081|
| Positive Emotion | 0.970   | 1.081|

*Source: Data Processed, 2019.*

Table 2 – Autocorrelation Test

| Variable       | Significant Result |
|----------------|--------------------|
| Durbin Watson  | 1.403              |

*Source: Data Processed, 2019.*

Durbin Watson's value is between -2 to 2, meaning that there is no autocorrelation problem (Santoso, 2012).

Table 3 – Test Results $t$

| Variable       | Significant |
|----------------|-------------|
| Life Style     | 0.001       |
| Positive Emotion | 0.012   |

*Source: Data Processed, 2019.*

In the Life Style variable with a significance level of 95% ($\alpha = 0.05$). The significance value (P Value) on the Life Style variable is 0.001 <0.05. On the basis of these comparisons, $H_0$ is rejected or means that the Life Style variable has a significant effect on Impulse Buying variables.

In the Positive Emotion variable with a significance level of 95% ($\alpha = 0.05$). The number of significance (P Value) on the variable is 0.012< 0.05. On the basis of these comparisons, $H_0$ is rejected or means that Positive Emotion variables has a significant effect on Impulse Buying variables.
The calculated F value is 11,186 with a significance value (P value) of 0.000. With a 95% significance level ($\alpha = 0.05$). The significance value (P value) is 0.000 <0.05. On the basis of these comparisons, $H_0$ is rejected or means that the Life Style and Positive Emotion variables have a significant influence on the Impulse Buying variable.

In table 6 it can be seen that the value of adjusted R Square is 0.362. This means that the independent variable (Life Style and Positive Emotion) can explain the dependent variable (Impulse Buying) by 36.2%, while the rest is explained by other factors that are not examined.

Obtained multiple linear regression equation as follows:

$$ Y = 12.805 + 0.399 \times X_1 + 0.487 \times X_2 $$

Above equation can be explained as follows:
- The value of 0.399 in the Life Style variable ($X_1$) is positive so it can be said that the higher the Life Style given by the Consumer, the higher Impulse Buying will be;
- The value of 0.487 in the Positive Emotion variable ($X_2$) is positive so that it can be said that the higher the Positive Emotion provided by the Consumer, also for the higher Impulse Buying.

**CONCLUSION**

Based on the analysis and discussion of the influence of life style variables on impulse buying through positive emotions on consumers of Palembang JM Supermarket, the following conclusions can be drawn:
- Life Style has a significant effect on impulse buying JM Supermarket in Palembang city;
- Positive Emotion has a significant affects Impulse Buying in Palembang JM Supermarket customers;
- Lifestyle variables and positive emotion have a simultaneous effect on the variable impulse buying.
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THE EFFECT OF LEADERSHIP STYLE, MOTIVATION AND DISCIPLINE OF WORK ON THE PERFORMANCE OF EMPLOYEE OF BANK XYZ IN THE JATIWARINGIN AREA

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ABSTRACT
Employee performance is one aspect that is a major concern for companies in the current era of globalization. Performance that is expected to produce the best results, so that it is also needed in the banking world needed to get new ones. There are several changing factors that influence the company between other styles, leadership style, motivation, and discipline of work. Based on the above reasons, this study aims to analyze leadership style, motivation and discipline of work towards Bank XYZ employees in the Jatiwaringin Area, with a total of 100 company respondents purposively. The method used is Structural Equation Model (SEM) using Partial Least Squares (PLS) with SmartPLS 3.0 software. The results of this study indicate that the leadership style determines the positive and significant effect on motivation and not significant to employee performance on employee discipline of work. Motivation also has a positive and significant impact on discipline of work and employee performance and positive discipline of work, but it is not significant on the performance of Bank XYZ employees in the Jatiwaringin Area.

KEY WORDS
Leadership style, motivation, discipline of work, employee performance.

Company performance is one aspect that is a major concern for companies in the current era of globalization. Performance that is expected to produce the best results, so that it is also needed in the banking world needed to get new ones. Banks with the best service support are able to get attention from the bank. Banking in the era of globalization requires banks to become banks with guaranteed good service (Muljono, 1994). Therefore, it is one of the companies that produce companies in Indonesia.

There are several changing factors that influence the company between other styles, leadership style, motivation, and discipline of work. Leadership style represents the norm of behavior that is used by someone at this time trying to influence the behavior of others or subordinates (Thoha, 2010). Leadership style that is very important for employees to manage tasks and tasks that are significantly needed to improve employee performance which impacts on the company's progress before in the banking world.

Banking companies need reliable and highly motivated human resources to work. Employees in the globalization era are required to produce the best; therefore there must be one of the company's main benchmarks in supporting company performance. Motivation is very important because motivation is the thing that causes, channel and support people to want to work hard and enthusiastically achieve optimal results.

Therefore, motivation is a process that encourages, directs, and encourages employees to be directed towards the company's goals. Discipline of work is very necessary in producing employees who have a high level of performance. Employee discipline is the nature of an employee who unconsciously meets certain organizational rules and regulations (Mangkuprawira and Hubeis, 2007). Discipline greatly influences performance within the company and is seen as a form of training for employees in implementing company rules. The XYZ Bank office to be studied is the XYZ Bank Jatiwaringin Area consisting of 26 branches and among them there are central branch offices, sub-branch offices and cash offices. XYZ Bank Jatiwaringin Area is ranked second at the national level in the employee performance category in 2017.

The following is presented secondary data of Key Performance Indicator (KPI) with the
type of full branch office and supporting branch taken from Bank XYZ Jatiwaringin Area in December 2016 until December 2017.

| No | Branch Name                        | Type | KPI Dec 2016 | KPI Dec 2017 |
|----|-----------------------------------|------|--------------|--------------|
| 1  | Bekasi Jatiwaringin               | B1   | 103.23       | 114.07       |
| 2  | Bekasi Sentra Niaga Kalimalang    | B2   | 95.77        | 100.20       |
| 3  | Bekasi Ahmad Yani                 | B1   | 103.88       | 112.33       |
| 4  | Bekasi Kemang Pratama             | B2   | 106.77       | 104.14       |
| 5  | Bekasi Pondok Gede Raya           | B2   | 103.51       | 94.00        |
| 6  | Bekasi Taman Galaxy               | B2   | 94.14        | 109.60       |
| 7  | Bekasi Jaka Sampurna              | B3   | 101.92       | 103.30       |
| 8  | Bekasi Komsen Jati Asih           | B2   | 80.26        | 103.94       |
| 9  | Cibubur Citra Grand               | B3   | 95.13        | 105.53       |
| 10 | Bekasi Ujung Aspal                | B3   | 88.28        | 112.56       |

Viewed from Table 1, there was a decrease in KPI for several branch offices from 2016 to 2017, namely the Bekasi Branch Office (KCP) Kemang Pratama with a decrease of 2.63 points from 106.77 to 104.14 and Bekasi KCP Pondok Gede Raya 9.51 points from 103.51 to 94.00. In addition to these two offices, there was an increase in other branch offices. The eight other branch offices increased and only left two branch offices. The decrease in KPI can be influenced by leadership style and employee motivation. This affects employee discipline of work because delay indicates a lack of discipline of work from employees. Table 1 also proves that leadership style and motivation and discipline of work are influencing factors in improving performance (Pawirosumarto et al. 2017). Based on the results of interviews with the Head of the Jatiwaringin Area Branch, Bank XYZ wanted to know the effects of 3 variables, namely, leadership style, motivation and discipline of work on employee performance at Bank XYZ Jatiwaringin Area. Thus, leadership style, motivation, and good discipline of work can be expected to affect the results of employee performance for the company.

Based on the description, the formulation of the problem in this study are: 1. What are the leadership styles, motivations, and work discipline of XYZ bank employees in the Jatiwaringin Area?, 2. How does the leadership style and motivation influence the work discipline of the XYZ bank employees in the Jatiwaringin Area?, 3. How does the influence of leadership style, motivation and work discipline on the performance of the XYZ bank Jatiwaringin Area.

This study aims to know and analyze the leadership style, motivation, and discipline of work of Bank XYZ employees in the Jatiwaringin Area, to know and analyze the influence of leadership style and motivation on the discipline of Bank XYZ Jatiwaringin Area employees and to know and analyze the influence of leadership style, motivation and discipline of work on the performance of Bank XYZ employees in the Jatiwaringin Area.

**LITERATURE REVIEW**

One of the most important aspects in improving performance is leadership style. The leadership style in the banking sector is needed by leaders, because it can provide direction to its employees. Leadership style is a way used by leaders in interacting with their subordinates (Tjiptono, 2006). Another theory about leadership style is the path-goal theory of leadership. Path-goal theory leadership is a leadership theory which states that there are two contingency variables that link leadership behavior with results in the form of job satisfaction and performance. Basically, path-goal theory seeks to explain the influence of leader behavior on motivation, satisfaction, and execution of the work of subordinates. In table 2, House (1996) suggests a path-goal theory of four main types or styles of leadership.

Herzberg (1987) revealed in the theory of two motivational factors in carrying out their work, employees were influenced by two main factors, namely Maintenance / Hygienic Factors (Factors of Maintenance or Hygiene) and Motivation Factors listed in Table 3.
Table 2 – Types or styles of leadership

| Type of Leadership Style                  | Definition                                                                 |
|-------------------------------------------|---------------------------------------------------------------------------|
| 1 Directive Leadership Style              | This leadership style has the perception that: the leader as a whole directs his subordinates and subordinates know exactly what is expected of him to the leader. |
| 2 Supportive Leadership Style             | This leadership style has the perception that: Leaders have a willingness to explain themselves, be friendly, approachable, and have genuine human concern for their subordinates. |
| 3 Participatory Leadership Style          | This leadership style has the perception that: The leader tries to ask and use the suggestions from his subordinates. But decision making is still at the leader hands. |
| 4 Achievement Oriented Leadership Style   | This leadership style has the perception that: The leader sets a set of goals that challenge his subordinates to participate. The leader also gives confidence to his subordinates capable of carrying out work tasks properly. |

Hygiene factors are factors that are important for motivation in the workplace. This factor does not lead to positive satisfaction for the long term. But if these factors are not present, then dissatisfaction arises. This factor is extrinsic factors to work. Hygienic factors are called dissatisfiers or maintenance factors needed to avoid dissatisfaction. Hygiene factors are pictures of individual physiological needs that are expected to be fulfilled. Hygiene factors include salary, personal life, quality of supervision, working conditions, job security, interpersonal relationships, wisdom, and company administration.

Motivation Factor According to Herzberg, hygiene factors cannot be considered as motivators. Motivational factors must produce positive satisfaction. The factors inherent in the work and motivating employees for a superior performance are called satisfaction factors. Employees only find valuable intrinsic factors in motivation factors. The motivators symbolize psychological needs that are perceived as additional benefits. Motivation factors associated with the content of work include success, recognition, the work itself, improvement and growth in work.

According to Mangkuprawira and Hubeis (2007) employee discipline is the nature of an employee who consciously adheres to certain organizational rules and regulations. Discipline of work is a tool or method used by a company to influence the behavior of its employees in order to obey the rules and regulations in the company in achieving the objectives of the company (Rivai, 2009). Based on that definition, the factors as well as indicators those influence employee disciplines of work by (Soedjono, 2000) are:

- Punctuality: It can be interpreted that the accuracy that means in accordance with the rules that apply, while time is the whole series when the process, action, or circumstances are in or take place;
- Obedience to regulations: The rules of the company, both written and unwritten, are made so that within the organization's goals can be achieved properly, it requires employees who are obedient to the rules and loyal to the company, as well as the goals of the organization;
- High responsibility: The responsibility given by the company to employees is carried out as well as possible, completing it according to the burden given and according to the procedure, and being responsible if something goes wrong with the results of the work that has been done;
- Maintenance of Office Equipment: Office equipment is one of the important components in carrying out activities, so that activities can go according to plan and smoothly.

Performance is what employees do, so there is something that influences the combination of organizational employees, namely output quantity, output quality, output period, workplace presence and cooperative attitude (Mathis and Jackson, 2002). Performance that is assessed in a company is one of the employee's performance, namely how the employee does the work that has been charged to him. Performance indicators according to Mangkunegara (2005) include several parts, namely:

- Work Quantity. This amount of work is adjusted to the existing working time, which
needs to be considered not the routine results but how quickly the work can be completed in a time and the more work completed, the better the performance of its employees.

Work Quality. The quality of work is achieved based on the requirements of suitability and work readiness of employees. The quality of work provided is those that meet the SOP (Standard Operational Procedures) requirements.

Timeliness of Work. Associated with carrying out activities in a timely manner. Timeliness shows the effectiveness of using the available time allocation. This is very important in the banking world where it covers money issues.

CONCEPTUAL FRAMEWORK

Theoretical research framework which is shown in the description above can be explained through a systematic overview of a study as seen from Figure 1. Some of the previous research related to leadership style, motivation and discipline of work and their implications on the employee performance are mentioned in this following section:

METHODS OF RESEARCH

The study was conducted at PT Bank XYZ Jatiwaringin Area which is a state-owned company. PT Bank XYZ Jatiwaringin Area covers the Bekasi area and its surroundings. This research was conducted from September to November 2018, to collect primary data and secondary data. Primary data obtained from questionnaires distributed to respondents and interviews with informants of Human Capital Division (HC) Bank XYZ Jatiwaringin Area, while secondary data was obtained from the relevant institutions. The number of samples taken in this study was 100 samples selected purposively, with the criteria of 1 branch head and 9 employees at each branch office (B1-B3 Type).

Processing and analysis of data in this study was carried out by instrument testing, descriptive analysis, and PLS to analyze SEM models. The instrument test was conducted to determine the validity and reliability of the questionnaire; this was done by testing the items in the questionnaire given to the respondents. If declared valid, then the question is used for the next discussion. Research begins by analyzing leadership style, motivation, discipline of work, and employee performance. Based on this, the hypothesis is formulated, namely: (H1) Leadership style has a significant effect on employee performance, (H2) Leadership style
has a significant effect on employee motivation, (H3) Leadership style has a significant effect on employee discipline of work. (H4): Motivation has a significant effect on employee discipline of work, (H5) Motivation has a significant effect on employee performance and (H6) Discipline of work has a positive and significant effect on employee performance. In this study, the data analysis used is Structural Equation Modeling (SEM) with the partial least square (PLS) approach using SmartPLS 3.0 software. PLS is a component or variant based model. PLS is a multivariate statistical technique that can handle many response variables and explanatory variables at once (Geladi and Kowalski, 1986).

RESULTS AND DISCUSSION

The results of data collection from questionnaires to Bank XYZ employees at the Jatiwaringin area branch types B1 - B3 show several characteristic groups based on demographic data as shown in Table 3.

Table 3 – Distribution of respondents based on demographic aspects

| Information     | Respondent Group | Number of People | Percentage (%) |
|-----------------|------------------|------------------|----------------|
| Gender          | Men              | 25               | 25             |
|                 | Women            | 75               | 75             |
| Age             | 20-30            | 42               | 42             |
|                 | 31-40            | 34               | 34             |
|                 | 41-50            | 13               | 13             |
|                 | >50              | 11               | 11             |
| Length of Work  | 5-15 th          | 48               | 48             |
|                 | 16-25 th         | 11               | 11             |
|                 | >25              | 11               | 11             |
| Last Education  | SMA/SMK          | 9                | 9              |
|                 | D3               | 11               | 11             |
|                 | S1               | 76               | 76             |
|                 | S2               | 4                | 4              |

Observations recorded through questionnaires show that the majority of employees are women with a percentage of 75%, gender affects employee productivity (Mangkunegara 2005). For this reason, adjustments in recruitment are very important to adjust the company's needs for labor. The distribution of the age of the largest respondents is 20-30 years old with a percentage of 42%. This age belongs to the Y generation born between 1979 and 1996 (20-30 years). Generation Y has criteria such as being on time, making a difference, having
tolerance, managing the environment well, original, family oriented, having a broad perspective, sticking to technology, loving personal freedom and having good teamwork (Hammil 2005). Bank XYZ Jatiwaringin Area has employees in the productive age category, namely at the age of 20-40 years, making it easier for these individuals to improve their performance, because it is very needed by the company to develop and maximize the potential of its employees. Then based on his tenure, 48% of employees have a service life of more than 5 years. This shows that a number of employees at Bank XYZ Jatiwaringin Area have good loyalty to the company. In the education level, 76% of employees have a S1 background which indicates that Bank XYZ employees in the Jatiwaringin Area have employees who have a fairly high education standard.

Evaluation of the reflection indicator model: (1). reliability of individual items, (2) internal son or construct reliability, and (3). the average variance is extracted (1-3 stages of convergent validity) and (4). discriminant validity. The measurements in this study are categorized into convergent validity. From checking the reliability of individual items, it can be seen from the value of loading factors. Contains assessment factors with indicators between constructs. The loading factor value is used for validity instructions. The measurement results of Leadership Style in Figure 2 show that the directive style indicator has the highest value of 0.817. This shows that the directive style plays an important and influential role in determining the leadership style of the Bank. Giving directives from superiors can increase motivation and discipline of work that affect employee performance. The measurement results of Motivation in Figure 2 show that the Recognition indicator has the highest value of 0.862. This shows that the recognition received by employees can affect discipline of work and employee performance at Bank XYZ Jatiwaringin Area. Giving awards regularly can give recognition to these employees. The results of the measurement of discipline of work variables in Figure 2 show that the indicator of timeliness has the highest value of 0.866. This shows that the timeliness in work is very influential for employee discipline and can have an impact on employee performance. Time to enter work and rest time plays an important role in increasing employee discipline. The measurement results of employee performance variables in Figure 2 show that the indicator of work timeliness has the highest value of 0.940. This shows that the timeliness in completing work greatly affects employee performance. Appropriate work time and providing services in a timely manner to customers and prospective customers can affect employee performance.

| Latent Variable          | AVE  | Composite Reliability |
|--------------------------|------|-----------------------|
| Leadership Style         | 0.617| 0.863                 |
| Motivation               | 0.558| 0.857                 |
| Discipline of work       | 0.646| 0.879                 |
| Employee Performance     | 0.857| 0.947                 |

The model has good validity if each latent variable with a reflective indicator has AVE> 0.5, while it will be reliable if the latent variable has a composite reliability value of more than 0.7. The analysis shows that the AVE value of each latent variable has a value> 0.5 and all latent constructs have a composite reliability value of more than 0.7 so that it can be said that the PLS model meets good convergent validity requirements and has good, accurate and consistent reliability.

Testing the inner model or structural model is done by looking at the R-square of the research model. Data from the R-square estimation can be seen in Table 5.

| Variable     | R-square | R-square Adjusted |
|--------------|----------|-------------------|
| Disiplin Kerja| 0.418    | 0.406             |
| Kinerja      | 0.544    | 0.530             |
| Motivasi     | 0.390    | 0.384             |
From the R-square value above, that means:

- Leadership and Motivation Style can explain the diversity of Discipline of work 40.6% and the rest (59.4%) can be explained by other variables outside of the research;
- Leadership Style, Motivation, and Discipline of work are able to explain the diversity of Performance 53% and the rest (47%) can be explained by other variables outside of the research;
- The Leadership Style can explain the diversity of Motivation by 38.4% and the rest (61.6%) can be explained by other variables outside of the research. The value of $R^2$ is $0 \leq R^2 \leq 1$, if $R^2$ is partially closer to 1, the better the suitability of the model with data (Gujarati 1995). This R-square value is good enough.

**Hypothesis testing.** According to Zikmund (1997) hypotheses are propositions or conjectures that have not been proven that tentatively explain facts or phenomena, as well as possible answers to research questions. In PLS, testing each relationship is done by simulating the bootstrapping method for the example. The bootstrapping method is a sample data-based resampling method with a return requirement on the data to complete the size statistics of an example in the hope that the sample represents actual population data.

H0: The i-variable has no significant effect on the response H1: The i-variable has a significant effect on the response And reject H0 when p-value <0.05 or thit> 1.96.

| n/n     | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T-Statistic | P-Values |
|---------|---------------------|-----------------|-----------------------------|-------------|----------|
| DK – KN | 0.203               | 0.201           | 0.107                       | 1.888       | 0.060    |
| GK – DK | 0.104               | 0.106           | 0.093                       | 1.116       | 0.265    |
| GK – KN | 0.235               | 0.230           | 0.084                       | 2.809       | 0.005    |
| GK – MT | 0.624               | 0.632           | 0.064                       | 9.722       | 0.000    |
| MT – DK | 0.577               | 0.583           | 0.088                       | 6.581       | 0.000    |
| MT – KN | 0.416               | 0.423           | 0.106                       | 3.914       | 0.000    |

*Note: *) significant influence on alpha level 5%.

Based on the above table, we can conclude:

- Leadership style has a significant and positive effect on employee performance with a coefficient of 0.235. This result is evident at 5% alpha level because the p-value (0.005) is smaller than (0.05). This shows the better leadership style, then the performance of these employees will increase and vice versa;
- The leadership style towards employee motivation also has a positive and significant influence which is equal to 0.624. This result is evident at 5% alpha level because the p-value (0.000) is smaller than (0.05). This shows that the higher the leadership style, the motivation of employees will increase and vice versa;
- The leadership style of discipline of work has a positive influence, but it is not significant with a coefficient of 0.104. This result is not significant at 5% alpha level because the p-value (0.265) is greater than (0.05). This shows that the better the leadership style, the employee discipline of work will increase even though it is not large;
- Motivation towards discipline of work has a significant and positive influence with a coefficient of 0.577. This result is evident at 5% alpha level because the p-value (0.000) is smaller than (0.05). This shows the better employee motivation, employee discipline of work will increase and vice versa;
- Motivation on employee performance has a significant and positive influence and with a coefficient of 0.416. This result is evident at 5% alpha level because the p-value (0.000) is smaller than (0.05). This shows that the better employee motivation, the better the employee's performance and vice versa;
- Discipline of work on employee performance has a positive effect but not significant with a coefficient of 0.203. This result is not significant at the 5% alpha level because the p-value (0.060) is greater than (0.05). This shows that the better the discipline of work of employees, the employee's performance will increase but not significant.
Managerial Implications. Based on the results of the study, several things that need to be considered by Bank XYZ Jatiwaringin Area are:

- Leadership style is an influential variable in increasing employee motivation and performance. In this case, a leadership style that is suitable for subordinates will motivate employees and will improve their performance because they get the right direction from the boss, so the work can be done accordingly and the results are satisfactory;
- The motivation variable is a variable that has a positive and tangible effect on improving work discipline and employee performance. Awarding as a form of recognition among coworkers has a real influence on work discipline and employee performance in the office, because employees will be more disciplined in their work if the employee is motivated to produce the best performance;
- The variable discipline of work is a variable that influences employees' performance. The accuracy of work attendance, responsibility, maintenance of office equipment and compliance with regulations did not significantly influence the performance of Bank XYZ employees at the Jatiwaringin branch.

CONCLUSION AND RECOMMENDATIONS

In producing good employee performance, there must be a close relationship between leadership style, motivation and discipline of work. The results of the study showed that leadership style had a positive and significant effect on employee motivation and performance but was not significant for employee discipline of work. Motivation also has a positive and significant effect on discipline of work and employee performance and discipline of work have a positive effect, but not significant on employee performance.

Based on the results of the study, the advice that can be used as material for further research is to choose a sample of research based on more objective suggestions and discuss other different factors such as work environment, job satisfaction, organizational citizenship behavior and others. Increase the choice of alternative research in a wider distribution space such as region or center. Giving direction that is right on target and understanding what leadership style matches employees will increase motivation, work discipline and employee performance.

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CHILD VALUE, NUMBER OF CHILDREN AND USE OF CONTRACEPTIVE DEVICES FOR FERTILE AGE COUPLES

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ABSTRACT
Indonesia has increasing in population, in 2018 population is more than 261.9 million (BPS, 2018). The total fertility rate (TFR) in Indonesia has still not reached the target of 2.3 children each woman giving birth. The government should resolve this total fertility rate (TFR). The decreasing of TFR can press the Population Growth Rate (LPP). It makes the Family Planning (KB) programs are still important to be encouraged, because family planning programs can maintain birth rates. The purpose of this study was to analyze the value of children, the number of children, and the attitude of family planning at Fertile Age Couples (FAC) in the city of Bogor. The samples were couples of childbearing age in the sub-districts of South Bogor and West Bogor in Bogor City. The results showed that the children's grades were classified as positive for FAC. On average, FAC provides responses to children's values in the assessment are positive. The majority of FACs have realized the importance of family planning programs in the family, namely to spawn births and maintain birth spacing. The presence of children needs to be prepared related to the cost of living, education, and readiness of parents in educating them. The average number of children owned by FAC is between 1 and 2 children. It means that FAC in Bogor City has succeeded in reaching the target family planning program with an average use of contraceptives containing injections.

KEY WORDS
Total fertility rate, family planning, child value, number of children, attitude, population.

Indonesia experienced a population explosion. The population in 2018 is more than 261.9 million (BPS, 2018). It is shown that the number of Total Fertility Rate (TFR) in Indonesia has not still reached the target of 2.3 children each woman giving birth. The high rate of TFR is an important thing for the government. This reduction in numbers is needed to reduce Total Fertility Rate (TFR) and Population Growth Rate (LPP). Thus, family planning programs are still important to be encouraged.

According to the World Health Organization (2006) referenced by Paek et al. (2008) the definition of family planning is the ability of individuals or couples to anticipate and achieve their desires in having children and to provide distance and time in childbirth. According to Jirapongsuwan (2016), KB refers to the anticipation and attention of individuals and couples in determining the number of children, distance, and time of birth. The benefits of family planning programs include reducing poverty, maternal and infant mortality, empowering women on barriers to the burden of women who give birth to many children, increasing the sustainability of the surrounding environment (Cleland et al., 2006).

Birth settings can be influenced by the number of children desired (Davis & Blake, 1956). Mosha et al. (2013) there are differences between the values of children of villages and cities. Men who live in villages want to have many children to help them in agricultural activities. Based on social norms that have many children in the village can be a support system for the family. Men in villages are reluctant to allow their wives to have children, because family planning can control the number of children. Meanwhile, the value of children in the city shows that having children requires money. Costs incurred such as for raising children, especially in the fields of education, health services, and other social facilities. Residing in the city means that everything has expenses such as renting a house, buying food and other facilities. Having many children means that many costs. Families who live in
cities use contraception so that they do not have many children, because having children in the city requires being able to fulfill their daily needs.

**METHODS OF RESEARCH**

The study was conducted on fertile age couples with ages ranging from 15-49 years in the city of Bogor. The population in this study was couples of childbearing age in the sub-districts of South Bogor and West Bogor in the city of Bogor. When the study took place in March-May 2018. The method used in this study was multistage random sampling. The number of respondents in this study was 204 FAC. The data used in this study are primary and secondary data. Primary data are collected by means of surveys through face-to-face questionnaires. Secondary data are complementary data obtained from the sub-district, related district, population control and family planning services (Government), and relevant literature in this study.

**RESULT OF STUDY**

The results showed that the age of FAC studied was between 30 and 43 years old, with an average of 89 (43.6%). Based on education level, the average education level of FAC is high school as much as 107 (52.5%). Based on monthly income, the average income is $137 - $143 / month as many as 117 (57.4%). The contraceptives used by PUS were injected as much as 53 (26%) through personal expenses of 139 (68.1%).

Child's value for FAC is a response that FAC agrees to the existence of children in their lives. High children's values are reflected in the statement that children bring excitement, children carry guarantees of sustenance, children's guarantee ease in old age, children as inheritors of life and so on. Research also shows that the existence of children will not make life luxuries diminish. Around 76 percent of respondents is in agreement. Respondents believe that every child has their own fortune without any doubt that their children will reduce luxury and reduce the value of life.

Leida (2012) mentioned that having children has important thing for all participants. They often say that children are "drugs against death" and children as representatives of their parents. Some participants also believe that having many children can bring prosperity. The presence of children also means the morning of a married couple to keep their marriage alive. Children also support their parents in their daily lives. They can relieve household chores or help parents in the fields, so they can generate income in the economic field. Children are also considered to be inheritors of life for their parents. Having children is an important factor as a valued person in the community.

This study shows 71.57 percent of respondents have children 1 to 2 children. The majority of FACs have been aware of the importance of family planning programs in the family, namely to spawn births and maintain birth spacing. The presence of children needs to be prepared related to the regulation of the cost of living, education, and the readiness of parents in educating them. This is in line with Sherpa et al. (2013) the number of living children owned by the majority of women in Karnataka, India, amounting to 1-2 children.

The results of the study showed that FAC in the city of Bogor had successfully achieved the target of the family planning program. One of the targets of the success of the family planning program, namely Total Fertility Rate/TFR contained in the 2015-2019 National Medium-Term Development Plan (RPJMN) of 2.6 children per birth can be reduced to 2.28 children (www.bkkbn.go.id). The family planning program aims at spacing births and maintaining birth spacing. The presence of children needs to be planned related to the regulation of living costs, education, and the readiness of parents to educate them.

Most of the FAC attitudes in using contraception are positive. This is in line with Ehsanpour's research (2010) which shows that attitudes are an important factor in choosing methods of contraception, therefore this problem must be considered by family planning planners and consultants.
Table 1 – FAC distribution based on Children value

| No | Children value                                      | Really agree | agree (%) | disagree | really disagree | n (%) |
|----|-----------------------------------------------------|--------------|-----------|----------|----------------|-------|
| 1  | The child is the source of happiness                | 30           | 14.7%     | 86       | 42.2%          | 77    |
| 2  | Children’s guarantee not to be lonely               | 51           | 25.0%     | 126      | 61.8%          | 21    |
| 3  | Children bring excitement                          | 80           | 39.2%     | 124      | 60.8%          | 0     |
| 4  | Child guarantees sustenance                         | 51           | 25.0%     | 102      | 50.0%          | 46    |
| 5  | Children facilitate homework                        | 18           | 8.8%      | 87       | 42.6%          | 87    |
| 6  | Children guarantee old age convenience              | 59           | 28.9%     | 130      | 63.7%          | 15    |
| 7  | Children make it more mature                        | 80           | 39.2%     | 123      | 60.3%          | 1     |
| 8  | Valuable parenting experience                        | 85           | 41.7%     | 119      | 58.3%          | 0     |
| 9  | Parenting adds patience                             | 85           | 41.7%     | 117      | 57.4%          | 2     |
| 10 | Children as inheritors of life                      | 83           | 40.7%     | 121      | 59.3%          | 0     |
| 11 | Children's success is the joy of parents            | 83           | 40.7%     | 121      | 59.3%          | 0     |
| 12 | Children complete the meaning of life               | 76           | 37.3%     | 120      | 58.8%          | 6     |
| 13 | Children strengthen husband and wife relations      | 70           | 34.3%     | 130      | 63.7%          | 4     |
| 14 | Without children reduces love husband and wife      | 21           | 10.3%     | 75       | 36.8%          | 96    |
| 15 | Divorce prevention children                         | 14           | 6.9%      | 54       | 26.5%          | 117   |
| 16 | Children make it never calm                         | 14           | 6.9%      | 81       | 39.7%          | 94    |
| 17 | Child source of anxiety                             | 8            | 3.9%      | 39       | 19.1%          | 132   |
| 18 | Children make financial difficulties                | 25           | 12.3%     | 132      | 64.7%          | 39    |
| 19 | Children make luxury less                           | 1            | 0.5%      | 23       | 11.3%          | 155   |
| 20 | Without children guarantees the family economy      | 1            | 0.5%      | 27       | 13.2%          | 144   |
| 21 | Children limit freedom                              | 7            | 3.4%      | 28       | 13.7%          | 137   |
| 22 | Children limit opportunities to develop             | 3            | 1.5%      | 22       | 10.8%          | 152   |
| 23 | Children limit desire                               | 4            | 2.0%      | 28       | 13.7%          | 144   |
| 24 | The presence of the child is exhausting the body    | 19           | 9.3%      | 72       | 35.3%          | 96    |
| 25 | Without children, the body is healthier             | 1            | 0.5%      | 25       | 12.3%          | 149   |
| 26 | Caring children requires energy                      | 37           | 18.1%     | 111      | 54.4%          | 50    |
| 27 | Children disturb the intimacy of husband and wife   | 7            | 3.4%      | 21       | 10.3%          | 144   |
| 28 | Child causes husband and wife quarrels              | 3            | 1.5%      | 50       | 24.5%          | 119   |
| 29 | Without children is more able to survive            | 3            | 1.5%      | 15       | 7.4%           | 138   |

The FAC attitude shows that 95.6 percent or 195 FACs have a positive attitude towards decision making on contraceptive use and 4.4 percent or 9 PUSs have a negative attitude towards decision making on contraceptive use. PUS has been able to practice directly about the importance of family planning programs launched by the government. A positive attitude in decision making using contraception shows the success of the family planning program. Family planning programs from the government are well received by the community.

CONCLUSION

The average FAC responds that the value of children in their family is positive. The statements are such as children bring excitement, children carry guarantees of sustenance, children as a guarantee of ease in old age, children as inheritors of life and so on.

The majority of FACs have been aware of the importance of family planning programs in the family, namely to spawn births and maintain birth spacing. The presence of children needs to be prepared related to the regulation of the cost of living, education, and readiness of parents in educating them. The average number of children owned by FAC is between 1 and 2 children. This means that PUS in the city of Bogor has succeeded in reaching the KB program target.

High children’s values are reflected in the statement that children bring excitement, children carry guarantees of sustenance, children’s guarantee ease in old age, children as inheritors of life and so on.

The average FAC has a positive attitude towards decision making on contraceptive use. This means that family planning programs can be well received by the community.

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EFFECT OF SERVICE QUALITY, RELIGIOSITY, RELATIONSHIP CLOSENESS, AND CUSTOMER TRUST ON CUSTOMER SATISFACTION AND LOYALTY AT BANK JATIM SYARIAH

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ABSTRACT
This research aims to examine the effect of service quality, religiosity, relationship closeness, and customer trust on customer satisfaction and loyalty at Bank Jatim Syariah. Based on the literature review, the research hypothesis states that service quality and customer trust have a positive and significant effect on customer satisfaction. In addition, service quality, relationship closeness, customer satisfaction and religiosity have a positive and significant effect on customer loyalty. This research uses a questionnaire distributed to respondents/active customers of Bank Jatim Syariah. The hypothesis testing was carried out using Structural Equation Model (SEM) analysis technique. The research findings showed that service quality and customer trust have a positive and significant effect on customer satisfaction, customer satisfaction and relationship closeness have a positive effect on customer loyalty, and service quality and religiosity have a positive and not significant effect on customer loyalty. In particular, this research shows that the religiosity factor that has been an added value for sharia banks to retain customers is no longer relevant. Based on the research findings, it is recommended that Bank Jatim Syariah evaluate the tangible, product, and service factors and implement sustainable service standards so that customer satisfaction and loyalty are maintained.

KEY WORDS
Service quality, religiosity, customer, loyalty.

Currently, sharia banking is increasingly and widely accepted in the world, including in Indonesia. The demonstration that took place in Jakarta on November 4, 2016 and the peaceful action on December 2, 2016 made people aware and wanted to transfer their funds from conventional banks to sharia banks.

This opportunity must be immediately optimized by sharia banking. Sharia banks must immediately improve the service quality to be in line with conventional banks. Access to information technology such as ATM, Mobile Banking and Internet Banking is the focus for developing service quality.

There are 5 dimensions of service quality which consist of: tangible, empathy, reliability, responsiveness and assurance (Tjiptono, 2012: 174-175; Putri & Widodo, 2016: 3). Tangible is seen from the physical elements of the company, empathy is seen from the convenience of customers to access/contact the company, reliability is seen from the company's ability to provide services in accordance with the promises accurately and reliably, responsiveness is seen from a company policy to help and provide fast and right services to customers, and assurance is seen from the credibility, competence and politeness of the company.

The religiosity factor also causes customers to prefer sharia banks compared to conventional banks even though the products and services of sharia banks are still limited. Therefore, product and service development innovations must also remain an important focus for sharia banks in order to compete with conventional banks.

On the other hand, the ongoing effort made by Bank Jatim Syariah to establish relationship closeness with its customers is by consistently holding open table agenda on Car Free Day (CFD) event every Sunday in Bungkul Park, Surabaya. Thus, customers who
have not had time to transact at Bank Jatim Syariah on working hours and days can conduct banking transactions conveniently and take their families to exercise on Sunday at the same time. In addition, Bank Jatim Syariah employees will also get to know customers more closely in terms of their needs and activities.

The data in Table 1 explains the performance achievements of Bank Jatim Syariah for the 2012 - 2016 period, in which the total number of Bank Jatim Syariah customer accounts at the end of December 2016 reached more than 57,000 accounts. It increases 67% compared to December 2015 which reached approximately 34,000 accounts. The same thing happened to the total number of Third-Party Funds (TPF) which reached more than 285 billion rupiahs; it increases 32% compared to December 2015 which reached 216 billion rupiah. It proves that customer trust in Bank Jatim Syariah is increasing. Bank Jatim Syariah guarantees to customers that Bank Jatim Syariah is able to manage funds that have been optimally mandated in accordance with sharia principles.

Table 1 – Development of Number of Accounts (NoA) and Third-Party Funds (TPF) at Bank Jatim Syariah in the 2012-2016 Period

| Year | NoA | NoA (%) | TPF | TPF (%) |
|------|-----|---------|-----|---------|
| 2012 | 13,751 | 0% | 92,071,122,961 | 0% |
| 2013 | 18,431 | 34% | 120,531,724,840 | 31% |
| 2014 | 25,857 | 40% | 183,888,075,622 | 53% |
| 2015 | 34,186 | 32% | 216,122,740,300 | 18% |
| 2016 | 57,012 | 67% | 285,531,710,880 | 32% |

*Source: Secondary Data.*

Reports on sharia banking statistics issued by Bank Indonesia (BI) in the period 2012 to 2014 and reports on sharia banking statistics issued by the Financial Services Authority (OJK) in the period of 2015 to 2016 presented in Table 2 show that the number of branch offices of Bank Jatim Shariah at the end of 2016 reached 7 branch offices, which increased by 40% from 2015 which only reached 5 branch offices.

It proves that Bank Jatim Syariah wants to increase customer satisfaction by answering customer complaints about the difficulty of transactions at Bank Jatim Syariah by adding branch offices and sub-branch offices every year.

Table 2 – Report on the Development of Office Network of Bank Jatim Syariah

| Year | Number of Branch Office | Increase in Number of Branch Office (%) | Number of Sub-Branch Office | Increase in Number of Sub-Branch Office (%) |
|------|------------------------|----------------------------------------|-----------------------------|-------------------------------------------|
| 2012 | 1                      | 0%                                     | 3                          | 0%                                        |
| 2013 | 1                      | 0%                                     | 3                          | 0%                                        |
| 2014 | 3                      | 200%                                   | 5                          | 67%                                       |
| 2015 | 5                      | 67%                                     | 7                          | 40%                                       |
| 2016 | 7                      | 40%                                     | 8                          | 14%                                       |

*Source: Statistics on sharia banking issued by OJK in 2015-2016 and BI in 2012-2014.*

Another factor that affects the growth of the office network of Bank Jatim Syariah is customer loyalty. If there are many customers who are loyal to Bank Jatim Syariah, it will have an impact on increasing Third-Party Funds (TPF) and directly affect the growth of TPF and office network of Bank Jatim Syariah. Customer loyalty is a major factor and should be pursued by Bank Jatim Syariah if it wants to seize great opportunities. Considering the importance of customer loyalty, Bank Jatim Syariah needs to make strategic efforts. Satisfied customers will tell 3 to 5 people about the product or service they receive. However, on the other hand, dissatisfied customers will tell 10 to 12 people about their dissatisfaction (Janet, 2009; Dewi et al, 2014: 261).

Bank Jatim Syariah, which is a Sharia Business Unit of PT Bank Pembangunan Daerah Jawa Timur Tbk, was established based on Bank Indonesia Letter number 9/75/DS/Sb dated April 4, 2007 concerning: Approval of the Principle of Establishing a Sharia
Business Unit (UUS), Opening of Sharia Branch Offices, and Members of the Sharia Supervisory Board and Bank Indonesia Letter number 9/148/DIP/IPPrz/Sb dated July 24, 2007 concerning: Permit for Opening of Sharia Branch Offices. Bank Jatim Syariah was inaugurated on Tuesday 21 August 2007 which coincided with 8 Sya’ban 1428 H.

In its 10 years of establishment, Bank Jatim Syariah has performed a lot of development and innovation to provide convenience to the public in transactions through network expansion which includes office networks, sharia services, and Electronic Channels in the form of ATM, SMS Banking, Mobile Banking, and Internet Banking.

This research focuses on what factors affect service quality, religiosity, relationship closeness and customer trust on customer satisfaction and loyalty and test and analyze these factors in relation to customer satisfaction and loyalty.

**LITERATURE REVIEW**

Service can be defined as any form of activity given by one or more parties to another party which aims to give satisfaction to the second party for the goods and services that have been given. Service means two elements or groups of people who each need each other and have relevance. Therefore, the roles and functions inherent in each of these elements are different.

Service quality as a result of perceptions and comparisons between customer expectations and actual service performance has 2 main factors that affect service quality; i.e. the expected experience and the services received (Pujawan, 2010: 97; Moha & Loindong, 2016: 576).

Service quality is a beginning of customer satisfaction and also results from customer satisfaction. Service quality and customer satisfaction affect stronger visit intensity so that the improvement of service quality must be customer-oriented (Irawan, 2008: 64; Koestanto, 2014: 4).

There are five main dimensions of service quality, among others: 1) Reliability is the ability to provide services that have been promised immediately, accurately, and satisfactorily, 2) Responsiveness is the desire of employees to help consumers and provide responsive services, 3) Assurance is a guarantee that includes knowledge, competence, politeness, trustworthy characteristic of the employees, and freedom from danger, risk, or hesitation, 4) Empathy includes ease in establishing relationships, good communication, personal attention, and understanding of customer individual needs, and 5) Tangible includes physical facilities, equipment, employees, and means of communication (Tjiptono, 2009: 269; Panjaitan & Yuliati, 2016: 270).

Service is any action or activity that can be offered by one party to another. Basically, it is intangible and does not result in any ownership. Thus, services can be utilized by service companies to create customer satisfaction. However, companies also may not exclude dissatisfied customers. Therefore, companies must know and understand what their customers need and want (Kotler, 2007: 23; Bari, 2014: 2).

Religiosity is a person’s attitude towards religion in general; not just one aspect of religion. More specifically, religiosity is the intensity of a person’s way to become a religious person.

Spirituality is a broader concept, which represents transcendent beliefs and values that may or may not be related to religious organizations. Religiosity on the other hand refers to rituals and beliefs that may be shown in the context of religious institutions. Spirituality can be expressed in the context of religion; yet, one’s religiosity is not only caused by spirituality (Hodge et al, 2010: 3; Ghufron, 2010: 358).

Religiosity is behavior based on conscience and attachment to God which is manifested in the form of quantity and quality of worship and norms that govern relationships with God, relationships with human, and relationships with environments which is internalized in humans (Rahman, 2009; Umasugi, 2013).

Based on the above understanding, it is concluded that religiosity is a conscience and attachment to God that is manifested in various aspects of life in the form of quantity and...
quality of worship and norms that govern relationships with God, relationships with fellow 
humans, and relationships with environments which is internalized in humans.

The relationship closeness between employees and customers can be performed by 
building friendliness, credibility, employee image, and satisfaction that is felt while dealing 
with employees. Friendliness is important in the effort to build closeness with bank 
customers, and is one form of personalization that will make customers feel familiar, happy 
and friendly. In addition to friendliness, the credibility of employees is also an important factor 
for building closeness with customers (Hansen, 2003; Hariyanto, 2014: 233).

The possibility that causes customers to have more potential is to disclose information 
which is a type of closeness (Hansen, 2003; Halim & Suryani, 2013: 84). It is similar to 
someone who will share information with his/her business partners but not by selling. The 
closeness of employees and customers is reflected in the customer’s openness. If customers 
feel close to the bank, they will ask a lot about the products offered and the services they 
want. This condition will make it easier for banks to offer a variety of products and services.

Thus, this will be an opportunity to offer products. The closeness of employees and 
customers can be a competitive advantage with other banks. Banks that have managed to 
build loyalty with customers are usually due to the ability of banks to establish closeness with 
customers.

According to Barnes (in Halim & Suryani, 2013: 84), when customers become closer to 
a company and its employees, there is a positive effect in the interaction between the 
customer and the company.

Relationship dimensions are as follows. 1) Trust is something that is believed to be true. 
Trust will occur if one party has confidence in the reliability and integrity of the relationship 
partner. 2) Closeness. Relationship closeness is characterized by sincere feelings towards 
others. Customers make connections with a company because they like the company, like 
the products they offer or the people who work there; therefore, customers feel a certain 
closeness to them or have the same values and goals. 3) Reciprocal relationships. 
Relationships, that are important to both parties that will be continued by both, must provide 
mutual benefits for both parties. The self-approach way to the customer is expected to make 
the company know the needs and desires of the customer. The better the company knows 
the customer, the better the company will market its products; it is similar to the customer 
side. Customers will feel cared for which ultimately customer loyalty is created for the 
company for a long time.

Customer trust is all knowledge possessed by the customer and all conclusions made 
by the customer about objects, attributes, and benefits. The object can be in the form of 
products, people, companies, and everything, which someone has trust and attitude. 
Whereas, attributes are characteristics or features that the objects may or may not have. In 
addition, benefits are positive results that give attributes to customers. Managers must 
realize that trust in objects, attributes, and benefits shows consumers’ perceptions. 
Therefore, generally the trust of a customer is different from other customers (Sunarto, 2009: 
153; Fian, 2016: 4).

Trust indicators consist of 3 components, among others: 1) Perception of integrity is a 
consumer perception that the company follows acceptable principles such as keeping 
promises and behaving ethically and honestly. 2) Perception of benevolence is based on the 
amount of trust in partnerships that have goals and motivations that are advantages for other 
organizations when new conditions arise; it is the conditions where commitment is not 
formed. 3) Perception of competence is the ability to solve problems faced by customers and 
fulfill all their needs. This ability refers to skills and characteristics that allow a group to have 
a dominant influence.

Consumer behavior in choosing a product and service can be affected by trust factor. It 
is because trust factors relate to the information they receive about certain products or 
services that they choose. For a bank, increasing trust will increase the customer’s intention 
to use the bank because basically customer trust is caused by the satisfaction of the service 
they receive.
Trust arises from a long process until both parties trust each other. If trust is established between customers and companies, the effort to build it will be easier because the relationship between the company and customers is reflected in the level of customer trust. If the level of customer trust is high, the company's relationship with the customer will be strong. There is one way that companies can do to build relationships with customers for example: all types of products produced by the company must have quality or perfection as they should or as what the company promised, so that customers do not feel tricked which can cause them to switch to competing products.

Customer trust in banks is an important factor that affects customer loyalty because in the banking world, trust is a very important factor.

Customer satisfaction is the feeling of being happy or disappointed that arises after comparing the performance (results) of a product and with the expectations that the customers have (Repi & Baramulji, 2011: 66). Customer satisfaction is the result that buyers feel from the performance of companies that meet their expectations. Customers feel satisfied if their expectations are fulfilled and happy/joyful if their expectations are exceeded. Satisfied customers will be loyal longer, buy more products, are less sensitive to prices and give good comments about the company.

According to Lupyoaadi (in Achsan et al., 2014: 7), there are five factors that must be considered by companies in determining customer satisfaction, among others:

1) Product quality, in which customers will feel satisfied if their results show that the product, they are using, is high quality. 2) Service quality, in which customers will feel satisfied if they get good or expected service. 3) Emotion, in which customers will feel proud of and get confidence that other people will be amazed at him/her when using products with certain brands that tend to have a higher level of satisfaction. Satisfaction is obtained not from the quality of the product but social or self-esteem that makes customers feel satisfied with a particular brand. 4) Price, in which products with the same quality but set a relatively cheap price will give a higher value to the customer. 5) Costs, in which customers tend to be satisfied with the product or service if they do not need to incur additional costs or do not need to waste time getting a product or service.

Hasan (2010: 85-86) stated that in business practice, one's expectations are always related to the following five things. 1) Inconsistency between actual expectations and ideals received will be an unpleasant personal experience. It will disappear when the customer gets another product that fulfills their identity needs. 2) Customers will tend to use services that are perceived as having conformity to the product image with the perceptions and expectations they want. 3) Customer behavior is affected by the type of business/activity they have and the consistency of expectations for the image and quality of perceived product and service performance. 4) Good service will produce satisfaction and create a harmonious and smooth relationship. 5) By providing suitable products and pleasant services, customers will control external factors that can damage the company (bank) image (participating in defense).

Literally, loyal means faithful. Loyalty can be interpreted as loyalty. This loyalty appears without coercion, but it arises from one's own consciousness in the past. Businesses to create customer satisfaction are more likely to affect customer attitudes. Meanwhile, the concept of consumer loyalty further explains the behavior of buyers.

The commitment that accompanies repetitive purchases is a situation where customers do not want to move even though the product or service is being scarce in the market and consumers voluntarily recommend these products or services to colleagues, family or other consumers.

According to Griffin (in Arzena 2013: 3), loyalty shows the condition of a certain duration of time and requires that the purchase action occurs no less than twice. From the quote above, it is concluded that loyalty is an honest attitude of consumers to feel satisfaction from the results of the purchase of products or services provided by producers or sellers. So, the consumer will make repeated product purchases and create long-term relationships.
According to William W. Zikmund (in Arzena 2013: 3) aspects that affect customer loyalty are as follows: 1) Satisfaction is a comparison between expectations before making a purchase and perceived performance. 2) Emotional Bond is when consumers feel a strong bond with other consumers who use the same product or service. 3) Trust is the willingness of someone to trust the company to carry out a function. 4) Choice reduction and habit (convenience) is the purchase of products regularly as an accumulation of experience at any time or repetition. 5) History with company (experience with the company) is a person’s experience with the company that can shape behavior. Good company services will result in repetition of behavior in the company.

According to Griffin (in Arzena 2013: 4), the characteristics of loyal consumers include: 1) Making repeat purchases regularly; 2) Purchasing across product lines and services; 3) Referring to other people (referrals). 4) Showing ignorance to interest in competitors.

Previous research that showed the correlation between service quality and customer satisfaction is the research conducted by Khan & Fasih (2014) which showed that service quality, tangible, reliability, and empathy have a significant effect on customer satisfaction.

The same thing is also obtained from the research of Hidayat et al. (2015) which shows that service quality and customer trust have a significant effect on customer satisfaction and research conducted by Karim (2016) which shows that service quality has a significant effect on customer satisfaction. Previous research that showed the correlation between customer trust and customer satisfaction is a study conducted by Hidayat et al. (2015) which shows that service quality and customer trust have a significant effect on customer satisfaction.

Previous research that showed the correlation between service quality and customer loyalty is the research conducted by Khan (2014) which showed that service quality, tangible, reliability, and empathy have a significant effect on customer loyalty. The same thing is also obtained from the research conducted by Hidayat et al (2015) which showed that service quality, customer trust, religious commitment and customer satisfaction have a significant effect on customer loyalty and research conducted by Alshurideh (2017) which showed that service quality have a significant effect on customer loyalty.

Previous research that showed the correlation between customer satisfaction and customer loyalty is a research conducted by Rahmani-Nejad et al (2014) which showed that satisfaction, trust, commitment, and mental image have a significant effect on customer loyalty. The same thing is also obtained from the research conducted by Kashif et al (2015) which showed that customer satisfaction has a significant effect on customer loyalty and research conducted by Ayuni et al (2015) which showed that customer satisfaction has a significant effect on customer loyalty.

Previous research that showed the correlation between relationship closeness and customer loyalty is a research conducted by Fung So et al (2014) which showed that service brand evaluation and customer engagement have a significant effect on brand loyalty.

Previous research which showed the correlation between religiosity and customer loyalty is a research conducted by Hidayat et al (2015) which showed that service quality, customer trust, religious commitment, and customer satisfaction have a significant effect on customer loyalty.

![Figure 1 – Conceptual Framework](image-url)
Based on the above conceptual framework, the researchers formulate the research hypotheses as follows:

H1: Service quality has a significant and positive effect on customer satisfaction at Bank Jatim Syariah Surabaya.
H2: Customer trust has a significant and positive effect on customer satisfaction at Bank Jatim Syariah Surabaya.
H3: Service quality has a significant and positive effect on customer loyalty at Bank Jatim Syariah Surabaya.
H4: Customer satisfaction has a significant and positive effect on customer loyalty at Bank Jatim Syariah Surabaya.
H5: Relationship closeness has a significant and positive effect on customer loyalty at Bank Jatim Syariah Surabaya.
H6: Religiosity has a significant and positive effect on customer loyalty at Bank Jatim Syariah Surabaya.

METHODS OF RESEARCH

In this research, the researchers apply quantitative approach because it is one type of research activity whose specifications are systematic, planned, and clearly structured from the beginning to the creation of research designs; including research objectives, research subject, research object, data sample, data source, and methodology. The method used in this research is an explanatory survey which is a method used to carry out causal correlation between variables through hypothesis testing.

The scope of this research analyzes the correlation between service quality, religiosity, relationship closeness, and customer trust on customer satisfaction and loyalty.

The variables of this research can be identified into 3 which include exogenous, intervening, and endogenous variables. 1) Exogenous variable is independent variable that is not affected by other variables in the model. 2) Intervening variable is endogenous variable and independent variable at the same time that affects another endogenous variable in a model. 3) Endogenous variable is dependent variable that is affected by other variables in a model.

Service quality is the expected level of excellence and control over the level of excellence to meet customer desires (Mohi & Loindong, 2016: 577). Trust is the belief that someone will find what he/she wants in others and not what he/she feared about. Religiosity is a condition in someone who encourages him/her to behave in accordance with the level of obedience to religion. The relationship closeness between employees and customers is measured by the openness and willingness for various information in providing services. Customer loyalty is a situation where the customer is positive about the product or service provider which is accompanied by a consistent repurchase pattern. Customer satisfaction is a response or feeling of the customer for the performance of the product or service they receive.

The sampling technique in this research applies purposive sampling by using judgment sampling in which the sampling is based on an assessment of the characteristics of the sample members that are adjusted to the research objectives.

The research population is customers of Bank Jatim Syariah Surabaya. Considerations in selecting respondents include: a) the age of customers is at least 17 years old, b) customers who open a savings account of at least 6 months, c) customers who are actively transacting at Bank Jatim Syariah under consideration that customers can still remember or perceive the service quality of Bank Jatim Syariah employees.

According to Hasan (2002: 82), primary data is data that is obtained or collected directly in the field by the person doing the research or the person who needs it. The primary data collection method of this research uses questionnaire as the research instrument.

This research is a type of quantitative research. According to Hasan (2002: 98), the quantitative method is an analysis that uses quantitative analysis tools. It means that the
analysis tool uses models whose results are presented in the form of statistical and econometric model numbers and are explained and interpreted descriptively”.

The data analysis technique of this research applies descriptive analysis and statistical analysis of Structural Equation Model (SEM) - AMOS.

RESULTS AND DISCUSSION

Respondents in this research are 200 customers of Bank Jatim Syariah Surabaya which were obtained using judgment sampling technique. The data collection obtained data about the identity of respondents to complete research information. From 200 customers of Bank Jatim Syariah Surabaya, the research respondents were 125 men or 63% and the rest 75 were women or 37%. In addition, based on age, respondents aged between 17 years to under 24 years old were 28 respondents, aged between 24 years to under 29 years were 94 respondents, aged 29 years to under 34 years were 39 respondents, and aged over 34 years were 39 respondents. Based on the latest educational background, the majority of respondents were customers of Bank Jatim Syariah who had bachelor’s degree as many as 160 respondents or 80% and the lowest educational background were those with junior high school education as many as 3 respondents or 1%.

In terms of occupation, the majority of respondents are customers of Bank Jatim Syariah Surabaya who work as private employees as many as 104 respondents or 52%; whereas, the lowest level is customers who are still school students as many as 3 respondents or by 1%. In addition, in terms of income, the majority of respondents have income between 3 and 5 million as many as 106 respondents or 53% and the lowest level is customers who have income above 10 million as many as 15 respondents or 8%.

Table 3 – Respondents’ Response to Service Quality

| No | Question Items | Response | Mean | Category |
|----|----------------|----------|------|----------|
|    |                | 1 2 3 4 5 |      |          |
| 1  | SQ1            | 0 4 37 140 19 | 3.87 | Agree    |
| 2  | SQ2            | 0 0 32 131 37 | 4.03 | Agree    |
| 3  | SQ3            | 0 9 54 122 15 | 3.72 | Agree    |
| 4  | SQ4            | 3 23 25 114 35 | 3.78 | Agree    |
|    | Mean of Reliability | 3.85 |      |          |
| 5  | SQ5            | 0 0 18 133 49 | 4.16 | Agree    |
| 6  | SQ6            | 0 4 25 139 32 | 4.00 | Agree    |
| 7  | SQ7            | 0 0 6 148 46 | 4.20 | Agree    |
| 8  | SQ8            | 0 4 49 116 31 | 3.87 | Agree    |
|    | Mean of Assurance | 4.06 |      |          |
| 9  | SQ9            | 1 18 77 84 20 | 3.52 | Agree    |
| 10 | SQ10           | 0 9 75 90 26 | 3.67 | Agree    |
| 11 | SQ11           | 0 8 22 136 34 | 3.98 | Agree    |
| 12 | SQ12           | 0 10 44 115 31 | 3.84 | Agree    |
|    | Mean of Tangible | 3.75 |      |          |
| 13 | SQ13           | 0 0 20 121 59 | 4.20 | Agree    |
| 14 | SQ14           | 0 5 66 96 33 | 3.79 | Agree    |
| 15 | SQ15           | 0 1 58 106 35 | 3.88 | Agree    |
|    | Mean of Empathy | 3.96 |      |          |
| 16 | SQ16           | 0 8 25 136 31 | 3.95 | Agree    |
| 17 | SQ17           | 0 4 33 121 42 | 4.01 | Agree    |
|    | Mean of Responsiveness | 3.98 |      |          |
|    | Mean of Service Quality | 3.92 |      |          |

Source: the processed primary data.

The data showed that the majority of Surabaya Jatim Syariah Surabaya customers were active men in productive age who have obtained their latest educational background of bachelor’s degree and worked as private employees with income above IDR 3 - 5 million.

The data analysis used in this research is a descriptive analysis that includes data on 200 respondents from Bank Jatim Syariah Surabaya customers on the indicators of question
item. In addition, the statistical analysis of this research uses the Structural Equation Modeling (SEM) of AMOS version 22.0.

Based on 200 research questionnaires distributed to respondents who were all customers of Bank Jatim Syariah Surabaya, various concrete information regarding the responses of respondents to each research variable was obtained.

Based on the analysis on service quality, it appears that the customer provides a positive response to the 17 indicators of the statements under research. This is evidenced by the overall mean value of 3.92 from scale 5. Based on the predetermined class intervals, customer evaluation is included in the agreed category on the service quality indicators that they feel when they are customers of Bank Jatim Syariah.

Customers provide positive responses to 3 indicators of statements under research. This is evidenced by the overall mean value of the religiosity indicator of 3.83 from scale 5. Based on the predetermined class interval, the customer assessment is included in the agreed category on the religiosity indicators.

| Table 4 – Respondents’ Response to Religiosity Variable |
|--------------------------------------------------------|
| No | Question Items | Response | Mean | Category |
|----|----------------|----------|------|----------|
| 1  | RL1            | 1 2 3 4 5| 3.93 | Agree    |
| 2  | RL2            | 0 3 43 120 34| 3.65 | Agree    |
| 3  | RL3            | 0 0 47 127 26| 3.90 | Agree    |
| Mean of Religiosity | 3.83 | Agree |

Source: the processed primary data.

Customers provide positive responses to the 5 indicators of statements under research. This is evidenced by the overall mean value of the relationship closeness indicators of 3.76 from scale 5. Based on the predetermined class intervals, the customer assessment is included in the agreed category of relationship closeness indicators.

| Table 5 – Respondents’ Response to Relationship Closeness Variable |
|---------------------------------------------------------------|
| No | Question Items | Response | Mean | Category |
|----|----------------|----------|------|----------|
| 1  | RC1            | 0 17 54 109 20| 3.66 | Agree    |
| 2  | RC2            | 2 5 64 100 29| 3.75 | Agree    |
| 3  | RC3            | 1 6 49 119 25| 3.81 | Agree    |
| 4  | RC4            | 2 6 56 101 35| 3.81 | Agree    |
| 6  | RC5            | 0 11 43 118 28| 3.82 | Agree    |
| Mean of Relationship Closeness | 3.76 | Agree |

Source: the processed primary data.

Customers provide positive responses to the 2 indicators of statements under research. This is evidenced by the overall mean value of the trust indicators of 3.79 from scale 5. Based on the predetermined class intervals, the customer assessment is included in the agreed category of the trust indicators.

| Table 6 – Respondents’ Response to Customer Trust Variable |
|-----------------------------------------------------------|
| No | Question Items | Response | Mean | Category |
|----|----------------|----------|------|----------|
| 1  | CT1            | 4 37 18 109 32| 3.93 | Agree    |
| 2  | CT2            | 1 12 32 125 30| 3.65 | Agree    |
| Mean of Trust | 3.79 | Agree |

Source: the processed primary data.
3.89 from scale 5. Based on the predetermined class intervals, the customer assessment is included in the agreed category of the customer loyalty indicators.

Table 7 – Respondents’ Response to Customer Loyalty Variable

| No | Question Items | Response | Mean | Category |
|----|----------------|----------|------|----------|
| 1  | CL1            | 1 0 24 119 56  | 4.15 | Agree    |
| 2  | CL2            | 1 8 45 103 43  | 3.90 | Agree    |
| 3  | CL3            | 2 12 69 92 25  | 3.63 | Agree    |
|    | **Mean of Customer Loyalty** | 3.89 | **Agree** |

*Source: the processed primary data.*

Customers provide positive responses to the 3 indicators of statements under research. This is evidenced by the overall mean value of the customer satisfaction indicators of 3.75 from scale 5. Based on the predetermined class intervals, the customer assessment is included in the agreed category of the customer satisfaction indicators.

Table 8 – Respondents’ Response to Customer Satisfaction Variable

| No | Question Items | Response | Mean | Category |
|----|----------------|----------|------|----------|
| 1  | CS1            | 0 2 45 128 25  | 3.88 | Agree    |
| 2  | CS2            | 0 6 67 99 28  | 3.75 | Agree    |
| 3  | CS3            | 1 21 63 86 29  | 3.61 | Agree    |
|    | **Mean of Customer Satisfaction** | 3.75 | **Agree** |

*Source: the processed primary data.*

The next step after doing a descriptive analysis is doing statistical analysis using Structural Equation Modeling (SEM). However, the estimation of the model in stages needs to be carried out first.

Validity Test in this research used Confirmatory Factor Analysis (CFA) to test the one-dimensional variables in the research. The results of the CFA are as follows.

Figure 2 – CFA of Service Quality, Religiosity, Relationship Closeness, Customer Trust, Customer Satisfaction, and Customer Loyalty (Source: the processed primary data)
Thus, the testing results of Goodness of Fit from the above model are presented in Table 9 as follows.

Table 9 – CFA Goodness of Fit of Service Quality, Religiosity, Relationship Closeness, Customer Trust, Customer Satisfaction, and Customer Loyalty

| Goodness of Fit | Cut-off Value | Estimate Results | Description |
|----------------|---------------|------------------|-------------|
| $X^2$ - Chi Square | 205.778 | 677.559 | Marginal |
| CMIN/DF | $\leq 2.00$ | 3.894 | Marginal |
| Probability | $\geq 0.05$ | 0.000 | Marginal |
| GFI | $\geq 0.90$ | 0.751 | Marginal |
| AGFI | $\geq 0.90$ | 0.670 | Marginal |
| TLI | $\geq 0.95$ | 0.719 | Marginal |
| CFI | $\geq 0.95$ | 0.767 | Marginal |
| RMSEA | $\leq 0.08$ | 0.128 | Marginal |

Source: the processed primary data.

Table 9 shows that out of the 8 (eight) criteria used to assess the feasibility of a model, all CFA testing outputs do not meet the criteria. Thus, the model proposed in Figure 2 is modified to be the model in Figure 3 as follows.

![Figure 3](image_url)
Table 11 shows that the loading factor value of each indicator above has a cut-off value which indicates that the indicator is valid.

### Table 11 – Regression Weights of Service Quality, Religiosity, Relationship Closeness, Customer Trust, Customer Satisfaction, and Customer Loyalty

| Indicators | Probability (P) | Loading Factor | Cut-off Value | Description |
|------------|----------------|----------------|---------------|-------------|
| RC5 ↔ RC   | 0.000          | 0.730          | >0.40         | Valid       |
| RC4 ↔ RC   | 0.000          | 0.627          | >0.40         | Valid       |
| RC3 ↔ RC   | 0.000          | 0.708          | >0.40         | Valid       |
| RC2 ↔ RC   | 0.000          | 0.712          | >0.40         | Valid       |
| RC1 ↔ RC   | 0.000          | 0.558          | >0.40         | Valid       |
| Responsiveness ↔ SQ | 0.000  | 0.858          | >0.40         | Valid       |
| Empathy ↔ SQ | 0.000   | 0.683          | >0.40         | Valid       |
| Tangible ↔ SQ | 0.000  | 0.829          | >0.40         | Valid       |
| Assurance ↔ SQ | 0.000  | 0.828          | >0.40         | Valid       |
| Reliability ↔ SQ | 0.000  | 0.793          | >0.40         | Valid       |
| CT2 ↔ CT   | 0.000          | 0.852          | >0.40         | Valid       |
| CT1 ↔ CT   | 0.000          | 0.652          | >0.40         | Valid       |
| CS1 ↔ CS   | 0.000          | 0.756          | >0.40         | Valid       |
| CS2 ↔ CS   | 0.000          | 0.963          | >0.40         | Valid       |
| CS3 ↔ CS   | 0.000          | 0.760          | >0.40         | Valid       |
| CL1 ↔ CL   | 0.000          | 0.725          | >0.40         | Valid       |
| CL2 ↔ CL   | 0.000          | 0.830          | >0.40         | Valid       |
| CL3 ↔ CL   | 0.000          | 0.426          | >0.40         | Valid       |
| RL1 ↔ RL   | 0.000          | 0.851          | >0.40         | Valid       |
| RL2 ↔ RL   | 0.000          | 0.706          | >0.40         | Valid       |
| RL3 ↔ RL   | 0.000          | 0.629          | >0.40         | Valid       |

*Source: the processed primary data.*

Reliability test in this research uses construct reliability. The equation of construct reliability is as follows.

\[
CR = \frac{\left(\sum \text{Standardized Loading}\right)^2}{\left(\sum \text{Standardized Loading}\right)^2 + \sum \varepsilon^2}
\]

The limit value used to assess the acceptable level of reliability is > 0.70. The summary of the results of construct reliability test in Table 12 is as follows.

### Table 12 – Construct Reliability

| Variables | Constructs | SFL Square | Error (EJ) | Construct Reliability | Cut-off Value | Description |
|-----------|------------|------------|------------|-----------------------|---------------|-------------|
| RC        | RC5        | 0.533      | 0.467      | 0.802                 | > 0.70        | Reliable    |
|           | RC4        | 0.393      | 0.607      |                       |               |             |
|           | RC3        | 0.501      | 0.499      |                       |               |             |
|           | RC2        | 0.507      | 0.493      |                       |               |             |
|           | RC1        | 0.311      | 0.689      |                       |               |             |
|           | Responsiveness | 0.736   | 0.264      | 0.899                 | > 0.70        | Reliable    |
|           | Empathy    | 0.466      | 0.534      |                       |               |             |
|           | Tangible   | 0.687      | 0.313      |                       |               |             |
|           | Assurance  | 0.686      | 0.314      |                       |               |             |
|           | Reliability| 0.629      | 0.371      |                       |               |             |
| CT        | CT2        | 0.726      | 0.274      | 0.727                 | > 0.70        | Reliable    |
|           | CT1        | 0.425      | 0.575      |                       |               |             |
|           | CL1        | 0.572      | 0.428      |                       |               |             |
|           | CS1        | 0.572      | 0.428      |                       |               |             |
|           | CS2        | 0.927      | 0.073      | 0.869                 | > 0.70        | Reliable    |
|           | CS3        | 0.578      | 0.422      |                       |               |             |
|           | CL1        | 0.526      | 0.474      |                       |               |             |
|           | CL2        | 0.686      | 0.311      | 0.710                 | > 0.70        | Reliable    |
|           | CL3        | 0.181      | 0.819      |                       |               |             |
| RL        | RL1        | 0.424      | 0.576      | 0.701                 | > 0.70        | Reliable    |
|           | RL2        | 0.498      | 0.502      |                       |               |             |
|           | RL3        | 0.396      | 0.604      |                       |               |             |

*Source: the processed primary data.*
Table 12 above shows that the questionnaire from the variables of Service Quality, Religiosity, Relationship Closeness, Trust, Customer Satisfaction and Customer Loyalty has consistent and stable respondents’ answers from time to time on each statement. This can be seen from the construct reliability value which is more than the cut-off value.

The next step is to test assumptions that include the fulfillment of the use of SEM. In this SEM equation model, there are several assumptions that must be fulfilled, among others: The number of research samples was 200 respondents, all of whom were customers of Bank Jatim Syariah Surabaya.

Evaluation of normality distribution is carried by skewness value from the data which is usually presented in descriptive statistics. The statistical value for testing normality distribution is called z-value. If the z-value is greater than the critical value, it is assumed that the data distribution is not normal. Critical values can be determined based on the significance level of 0.01 (1%) which is equal to ± 2.58.

Table 13 – Data Normality

| Variables     | Cut-off Value | C.R. | Description       |
|---------------|---------------|------|-------------------|
| RL3           | ± 2.58        | .462 | Normal Distribution |
| RL2           | ± 2.58        | 1.376| Normal Distribution |
| RL1           | ± 2.58        | 1.096| Normal Distribution |
| CL3           | ± 2.58        | -1.037| Normal Distribution |
| CL2           | ± 2.58        | -0.404| Normal Distribution |
| CL1           | ± 2.58        | -1.224| Normal Distribution |
| CS3           | ± 2.58        | -1.468| Normal Distribution |
| CS2           | ± 2.58        | -0.982| Normal Distribution |
| CS1           | ± 2.58        | 0.681 | Normal Distribution |
| CT1           | ± 2.58        | -1.092| Normal Distribution |
| CT2           | ± 2.58        | 2.484 | Normal Distribution |
| Reliability   | ± 2.58        | 2.300 | Normal Distribution |
| Assurance     | ± 2.58        | 1.354 | Normal Distribution |
| Tangible      | ± 2.58        | -0.279| Normal Distribution |
| Empathy       | ± 2.58        | -1.316| Normal Distribution |
| Responsiveness| ± 2.58        | 1.688 | Normal Distribution |
| RC1           | ± 2.58        | 0.019 | Normal Distribution |
| RC2           | ± 2.58        | -1.335| Normal Distribution |
| RC3           | ± 2.58        | -0.054| Normal Distribution |
| RC4           | ± 2.58        | -1.430| Normal Distribution |
| RC5           | ± 2.58        | 1.009 | Normal Distribution |

*Source: the processed primary data.*

Based on the results of normality test data, all indicators are normally distributed because they have met the normality requirements, i.e. c.r ± 2.58 at the α 0.01 significance level. Therefore, the assumption of normality has been fulfilled so that this data is feasible to be used in the next estimates.

Data is considered normal if the data is symmetrical with its skewness value and has an ideal slope. Ghozali (in Dewi 2014: 53) argued that the data is considered to have a normal distribution if the value of the critical ratio skewness is below the absolute value of 2.58.

Testing of univariate outliers can be performed by determining threshold values that will be categorized as outliers by converting the value of research data on a standard score or what so-called z-score, which has a zero average with a standard deviation of one. According to Ferdinand (2002: 98), for large samples (above 80), evaluations are carried out using the basis that the observation that has z-score ≥ 3.0 will be categorized as outliers.

Table 14 below shows the z-score value ≥ 3.0. Therefore, it is concluded that there are univariate outliers. The number of observations for the value of ≥ 3.0 is 15 observations so that the number of respondents used for the next test is 185 people.
Table 14 – Univariate Outlier

| n/N     | N   | Min   | Max   | Mean  | Std. Deviation |
|---------|-----|-------|-------|-------|----------------|
| Zscore(SQ1) | 200 | -3.18451 | 1.92633 | .0000000 | 1.00000000 |
| Zscore(SQ2) |      | -1.74229 | 1.65730 | .0000000 | 1.00000000 |
| Zscore(SQ3) |      | -2.56600 | 1.92412 | .0000000 | 1.00000000 |
| Zscore(SQ4) |      | -3.01236 | 1.32978 | .0000000 | 1.00000000 |
| Zscore(SQ5) |      | -2.06600 | 1.51149 | .0000000 | 1.00000000 |
| Zscore(SQ6) |      | -3.29399 | 1.65938 | .0000000 | 1.00000000 |
| Zscore(SQ7) |      | -2.55200 | 1.70134 | .0000000 | 1.00000000 |
| Zscore(SQ8) |      | -2.74114 | 1.65635 | .0000000 | 1.00000000 |
| Zscore(SQ9) |      | -3.09608 | 1.81774 | .0000000 | 1.00000000 |
| Zscore(SQ10) |    | -2.19449 | 1.75995 | .0000000 | 1.00000000 |
| Zscore(SQ11) |   | -2.97884 | 1.53456 | .0000000 | 1.00000000 |
| Zscore(SQ12) |   | -2.47313 | 1.57013 | .0000000 | 1.00000000 |
| Zscore(SQ13) |   | -1.99608 | 1.34397 | .0000000 | 1.00000000 |
| Zscore(SQ14) |   | -2.40355 | 1.63803 | .0000000 | 1.00000000 |
| Zscore(SQ15) |   | -2.72994 | 1.63796 | .0000000 | 1.00000000 |
| Zscore(SQ16) |   | -2.94074 | 1.58348 | .0000000 | 1.00000000 |
| Zscore(SQ17) |   | -2.96505 | 1.47143 | .0000000 | 1.00000000 |
| Zscore(RL1) |    | -2.89684 | 1.61772 | .0000000 | 1.00000000 |
| Zscore(RL2) |    | -2.40716 | 1.96949 | .0000000 | 1.00000000 |
| Zscore(RL3) |    | -1.50054 | 1.85263 | .0000000 | 1.00000000 |
| Zscore(RC1) |    | -2.14773 | 1.73371 | .0000000 | 1.00000000 |
| Zscore(RC2) |    | -3.56482 | 1.62982 | .0000000 | 1.00000000 |
| Zscore(RC3) |    | -3.96896 | 1.69088 | .0000000 | 1.00000000 |
| Zscore(RC4) |    | -3.53362 | 1.50541 | .0000000 | 1.00000000 |
| Zscore(RC5) |    | -2.46195 | 1.60739 | .0000000 | 1.00000000 |
| Zscore(C11) |   | -2.58176 | 1.33000 | .0000000 | 1.00000000 |
| Zscore(C12) |   | -3.75899 | 1.50755 | .0000000 | 1.00000000 |
| Zscore(CL1) |   | -4.81795 | 1.30981 | .0000000 | 1.00000000 |
| Zscore(CL2) |   | -3.62880 | 1.38432 | .0000000 | 1.00000000 |
| Zscore(CL3) |   | -3.22165 | 1.67820 | .0000000 | 1.00000000 |
| Zscore(CS1) |   | -3.05990 | 1.82929 | .0000000 | 1.00000000 |
| Zscore(CS2) |   | -2.39100 | 1.71690 | .0000000 | 1.00000000 |
| Zscore(CS3) |   | -2.96321 | 1.58685 | .0000000 | 1.00000000 |

Valid (listwise) 200

Source: the processed primary data.

Outliers are observations or data that have unique characteristics that look very different from other observations. It appears in the form of extreme values on a single variable or combination variable. The mahalanobis distance for each observation can be calculated and will show the distance of an observation from the mean of all variables in a multidimensional space.

Calculating the mahalanobis distance is based on the chi square value at the free degree of the indicator used in each variable. There are 10 indicators, therefore, the value of chi squared is $X^2$ table (0.001: 33) = 63.8701.

Table 15 – Multivariate Outlier

|                        | N   | Min   | Max   | Mean  | Std. Deviation |
|------------------------|-----|-------|-------|-------|----------------|
| Predicted Value        | 185 | 11.59 | 186.22 | 102.24 | 33.573         |
| Std. Predicted Value   | 185 | -2.700 | 2.501 | .0000 | 1.000          |
| Standard Error of Predicted Value | 185 | 7.455 | 33.491 | 21.811 | 5.867          |
| Adjusted Predicted Value | 185 | 11.414 | 211.72 | 103.12 | 36.462         |
| Residual               | 185 | -142.477 | 94769 | .0000 | 47.718         |
| Std. Residual          | 185 | -2.705 | 1.799 | .0000 | .906           |
| Stud. Residual         | 185 | -2.935 | 1.946 | -.007 | .996           |
| Deleted Residual       | 185 | -167.781 | 112.056 | -.873 | 58.024         |
| Stud. Deleted Residual | 185 | -3.013 | 1.964 | -.008 | 1.002          |
| Mahal. Distance        | 185 | 2.691 | 73.387 | 32.822 | 16.101         |
| Cook’s Distance        | 185 | .000 | .665 | .006 | .010           |
| Centered Leverage Value | 185 | .015 | .399 | -.178 | .090           |

Source: the processed primary data.

The processed data shows that there are still 7 data outliers i.e. data 59, 77, 54, 99, 11, 80 and 37 which have an mahalonobi distance value above 63.8701. Then the data must be discarded as many as 7 observations. So, the data for the next stage of analysis is 178 data. The results of processing data using AMOS can be seen in Figure 4 below.
Figure 4 – Structural Equation Model (Source: the processed primary data)

Thus, the results of the Goodness of Fit test from the above model found in Table 16 are as follows:

| Goodness of Fit | Cut-off Value | Estimate Results | Description |
|-----------------|---------------|------------------|-------------|
| $X^2$ - Chi Square | 209.042 | 684.176 | Marginal |
| CMIN/ DF | ≤ 2.00 | 3.865 | Marginal |
| Probability | ≥ 0.05 | 0.000 | Marginal |
| GFI | ≥ 0.90 | 0.751 | Marginal |
| AAGFI | ≥ 0.90 | 0.675 | Marginal |
| TLI | ≥ 0.95 | 0.721 | Marginal |
| CFI | ≥ 0.95 | 0.765 | Marginal |
| RMSEA | ≤ 0.08 | 0.127 | Marginal |

Figure 5 – Structural Equation Model [after revision] (Source: the processed primary data)
SEM analysis is intended to test the models that have been developed based on theory simultaneously. Based on the results of the model feasibility test, the probability value is <5% which is equal to 0.000. This shows that there is a mismatch of the model developed so that it requires modification of the model.

Based on the initial model, the population covariance variant matrix is not the same as the estimate model covariance variant matrix. So, modification of the model is carried out by correlating between residuals.

Thus, the results of the Goodness of Fit test from the above model are obtained in Table 17 as follows:

**Table 17 – Goodness of Fit of Structural Equation Model (after revision)**

| Goodness of Fit | Cut-off Value | Estimate Results | Description |
|-----------------|---------------|------------------|-------------|
| $X^2$ - Chi Square | 158.711 | 153.986 | Good |
| CMIN/ DF | ≤ 2.00 | 1.175 | Good |
| Probability | ≥ 0.05 | 0.083 | Good |
| GFI | ≥ 0.90 | 0.926 | Good |
| AAGFI | ≥ 0.90 | 0.870 | Good |
| TLI | ≥ 0.95 | 0.983 | Good |
| CFI | ≥ 0.95 | 0.989 | Good |
| RMSEA | ≤ 0.08 | 0.031 | Good |

*Source: the processed primary data.*

The modified structural model results in a decrease in the $X^2$ value with a probability of 0.083 in which this value is greater than 5%. Thus, it gets the same population covariant variant matrix as the estimate covariant variant of the model. In addition to this probability value, it can be seen that all the criteria have met the specified cut-off value. After obtaining the appropriate model, then the significance of the model can be seen by comparing the probability value of each causality relationship with ≤ 5%. The value of loading factor and significance is presented in Table 18 below.

**Table 18 – Weight Regression of SEM**

| Variables | Std. Estimate | P-Value | Description |
|-----------|---------------|---------|-------------|
| CS ← SQ | 0.733 | 0.000 | Significant |
| CS ← CT | 0.142 | 0.028 | Significant |
| CL ← SQ | 0.107 | 0.414 | Not Significant |
| CL ← CS | 0.524 | 0.000 | Significant |
| CL ← RC | 0.270 | 0.032 | Significant |
| CL ← RL | 0.027 | 0.784 | Not Significant |

*Source: the processed primary data.*

The structural model that has been obtained shows that the correlation between customer satisfaction and service quality is 0.733 while the loading value between customer satisfaction and customer trust is 0.142. This shows that the correlation between customer satisfaction and service quality is greater than the correlation between customer satisfaction and customer trust.

The correlation between customer loyalty and relationship closeness is 0.027, the loading value between customer loyalty and customer satisfaction is 0.524, the loading value between customer loyalty and service quality is 0.107 and the loading value between customer loyalty and religiosity is 0.027. It shows that the correlation between customer loyalty and customer satisfaction is greater than the correlation between customer loyalty and other variables.

**Hypothesis Testing:**

Hypothesis I. The hypothesis which mentions that “service quality has a significant and positive effect on customer satisfaction at Bank Jatim Syariah” is accepted which is evidenced by p-value < 0.05.
Hypothesis II. The hypothesis which mentions that “customer trust has a significant and positive effect on customer satisfaction at Bank Jatim Syariah” is accepted which is evidenced by p-value < 0.05.

Hypothesis III. The hypothesis which mentions that “service quality has a significant and positive effect on customer loyalty at Bank Jatim Syariah” is rejected which is evidenced by p-value > 0.05.

Hypothesis IV. The hypothesis which mentions that “customer satisfaction has a significant and positive effect on customer loyalty at Bank Jatim Syariah” is accepted which is evidenced by p-value < 0.05.

Hypothesis V. The hypothesis which mentions that “relationship closeness has a significant and positive effect on customer loyalty at Bank Jatim Syariah” is accepted which is evidenced by p-value < 0.05.

Hypothesis VI. The hypothesis which mentions that “religiosity has a significant and positive effect on customer loyalty at Bank Jatim Syariah” is rejected which is evidenced by p-value > 0.05.

DISCUSSION OF RESULTS

The findings showed that service quality has a significant and positive effect on customer satisfaction at Bank Jatim Syariah Surabaya. This is in line with the research conducted by Khan et al (2014), Rahmani-Nejad et al (2014), Hidayat et al (2015), and Karim (2016) who stated that service quality has a significant and positive effect on customer satisfaction.

The research findings showed that customer trust has a significant and positive effect on customer satisfaction at Bank Jatim Syariah Surabaya. This is in accordance with the research conducted by Hidayat et al (2015) who stated that customer trust has a positive effect on customer satisfaction.

The research findings indicate that service quality has no significant positive effect on customer loyalty at Bank Jatim Syariah Surabaya. This is different from the research conducted by Khan et al (2014), Kashif et al (2015), Hidayat et al (2015), Ayuni et al (2015), and Alshurideh (2017) who stated that service quality has a positive effect on loyalty customer.

The research findings showed that customer satisfaction has a significant and positive effect on customer loyalty at Bank Jatim Syariah Surabaya. This is in line with the research conducted by Hidayat et al (2015), Rahmani-Nejad et al (2014), Khan et al (2014), Kashif et al (2015), Ayuni et al (2015) who stated that customer satisfaction has a positive effect on loyalty customer.

The research findings indicated that relationship closeness has a positive and significant effect on customer loyalty at Bank Jatim Syariah Surabaya. This is in accordance with the research conducted by Fung So et al (2014) who stated that customer relationship closeness has a positive effect on customer loyalty.

The research findings showed that religiosity does not have a positive and significant effect on customer loyalty at Bank Jatim Syariah Surabaya. This is different from the research conducted by Rahmani-Nejad et al (2014) who stated that religiosity has a positive effect on customer loyalty. On the other hand, these research findings are in line with the research conducted by Hidayat et al (2015) and Ayuni et al (2015) who stated that religiosity has a positive and not significant effect on customer loyalty.

CONCLUSION AND SUGGESTIONS

Based on the analysis results and testing of the research hypotheses that have been carried out previously, the following conclusions can be drawn from this research: 1) The analysis results of service quality indicated that the assurance factor is more decisive than other factors. On the other hand, the tangible is a non-dominant factor in which customers override physical appearance and prioritize security in conducting transactions at Bank Jatim
Syariah Surabaya. 2) Quality service has a significant and positive effect on customer satisfaction at Bank Jatim Syariah Surabaya. It means that if Bank Jatim Syariah always maintains and improves the quality of its services, customers will feel more satisfied because their expectations have been fulfilled. 3) Customer trust has a significant and positive effect on customer satisfaction at Bank Jatim Syariah Surabaya. It means that if Bank Jatim Syariah continues to maintain customer trust, customers will feel more satisfied and it is possible that they will increase their savings balance and increase the intensity of transactions at Bank Jatim Syariah. 4) Quality service does not have a significant and positive effect on customer loyalty at Bank Jatim Syariah Surabaya. It means that Bank Jatim Syariah does not only have to maintain and keep the quality of its services to maintain customer loyalty but also must take other steps. 5) Customer satisfaction has a significant and positive effect on customer loyalty at Bank Jatim Syariah Surabaya. It means that customer loyalty will be formed if the customer is satisfied with the services that Bank Jatim Syariah provides; especially if the bank can provide services that exceed customer expectations. 6) The closeness of the relationship has a significant and positive effect on customer loyalty at Bank Jatim Syariah Surabaya. It means that the emotional relationship that exists between the employees of Bank Jatim Syariah Surabaya and its customers will indirectly have an impact on customer loyalty. This is very beneficial for Bank Jatim Syariah. If the bank is able to establish the bond, the customer will not move to another bank even though with the lure of high profit sharing. 7) Religiosity does not have a significant and positive effect on customer loyalty at Bank Jatim Syariah Surabaya. It means that religious factors do not always guarantee that customers will remain loyal to Bank Jatim Syariah.

This research has been attempted and carried out in accordance with scientific procedures. However, it still has limitations, among others: 1) Factors affecting customer loyalty and satisfaction in this research consist of only 4 variables which include service quality, religiosity, relationship closeness, and customer trust; whereas, there are still many other factors affecting customer loyalty and satisfaction. 2) The limitations in using a questionnaire are that sometimes the answers given by the respondent do not indicate the real situation. 3) After the revision, the Adjusted Goodness of Fit Index (AGFI) in the SEM is still at a value of 0.870 which should be value equal to or greater than 0.90.

Based on the analysis results of the research that has been carried out, the researcher will then present some suggestions as follows. 1) For STIE Perbanas Surabaya, these research findings are expected to be able to give contribution regarding customer loyalty and satisfaction and also as a reference for other students who wish to deepen their research references related to customer loyalty and satisfaction. 2) For Bank Jatim Syariah Surabaya, these research findings have several things that must be addressed including: a) In terms of determinants of service quality, the assurance factors of “employees act professionally, employees offer safe investment products, employees are polite, and employees have good product knowledge” should be maintained because respondents respond to this very well. However, in the tangible factor in the form of “modern equipment in banking hall, the offered facilities are attractive, the employees’ explanation for Bank Jatim Syariah products is easy to understand, and office buildings are good” should be evaluated immediately and repaired continuously because customers give less positive responses against this. b) In terms of relationship closeness, customer involvement in terms of “repairs and product development of Bank Jatim Syariah” is very necessary because constructive criticism and suggestions from customers will clarify the picture of the good and bad products and services provided by Bank Jatim Syariah. c) In terms of customer trust, employees of Bank Jatim Syariah, especially service assistants are expected to always provide solutions to the problems faced by customers related to the products and services. d) In terms of customer loyalty, high profit-sharing offers and the lure of attractive souvenirs from other banks are still attractive to the existing customers of Bank Jatim Syariah to move to those banks. It must be taken into consideration seriously by the management of Bank Jatim Syariah. The concrete step is to benchmark the competing banks regarding the products and services. e) In terms of customer satisfaction, the services provided by Bank Jatim Syariah have not yet made customers satisfied that customers still consider that services provided by other banks are
better than Bank Jatim Syariah. Regarding this reason, the management of Bank Jatim Syariah should evaluate the implementation of standard services carried out in the Surabaya Syariah Branch. 3) Future research is expected to expand the scope of determinants of customer satisfaction and loyalty found in the references of previous research articles. Some aspects that could not be conducted by the authors in this research include: a) Perception, Identification, Enthusiasm, Attention, Absorption and Interaction which were discussed in the research article of Fung So, et al (2014). b) Mental imagery which was discussed in the research article of Rahmani-Nejad et al (2014). c) Sincerity, Personalization, and Formality which were discussed in the Kashif et al (2015) research. d) Sharia principles which was discussed in the research of Hidayat et al (2015) e) Compliance and Brand Image which were discussed in the research of Ayuni et al (2015).

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**IMPLEMENTATION OF MARKETING MIX STRATEGY FOR START-UP BUSINESS: FRUIT COMBINING**

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**ABSTRACT**
Nowadays, business rivalry in the food and beverages industry is going tightly and pushes the company to planning innovative marketing strategy. To capture the market needs, the company should have added value to their product. In addition, the company must also have a good marketing strategy to attract potential consumers. Fruit combining is one of creative innovation product that combines the original fruit and jelly in one package, which combines the need for vitamins in fruits and fibers in the jelly. Fruit combining are expected to be the solution in modern society to save the fruit. Not even in the flavor of fruit, but it can also represent an alternative for daily fruit consumption society. Urban family activities are indeed heavy, if they not had time to cut and processing fresh fruit at home, fruit combining products could be a good alternative to substitute the need for fiber and vitamins needed by the body. In order to compete and hold out, focusing activity and company business process have to concentrate in dynamic customers needs until purpose of filled customers needs and customers satisfaction will completed, because of that, our start up business focusing on how to selling of their new product fruit combining. The purpose to be achieved are to give more innovative marketing strategy based on society dynamic changes to arrogate the fruit combining market. Analyze and information obtained and limited in Banten and Jakarta area. Result and conclusion from these researches are about information of consumer behaviors concerning to fruit combining products and information about strengthen and weakness of the product see based on current marketing concepts. And the end, based on received and refined data, we conclude that a strategic marketing planning will arrogate market, brand awareness and market educated from fruit combining special quality.

**KEY WORDS**
Marketing, strategy, planning, marketing mix.

Nowadays, the competition in the food and beverages industry is getting tight. It can be seen from the number of products in circulation quite a lot, so consumers should be selective. To capture the desired market, the company should have added value to the product being sold. In addition, the company must also have a good marketing strategy to attract potential consumers.

Fruit combining is one of creative innovation product that combines the original fruit and jelly in one package, which combines the need for vitamins in fruits and fibers in the jelly. Fruit combining are expected to be the solution in modern society to savor the fruit. Not even in the flavor of fruit, but it can also represent an alternative for daily fruit consumption society.

Urban family activities are indeed heavy, if they not had time to cut and processing fresh fruit at home, fruit combining products could be a good alternative to substitute the need for fiber and vitamins needed by the body.

Having this opportunity, PT Redceri Indonesia tried to launch a fruit combining products: Redceri Pure Fruit Jelly with two variants i.e. Orange and Carica. This product is trying to enter in a niche market which is currently in the domination by import products such as Tarami from Japan, Korea and of Tutto Sun Moon from Singapore. Although there are other similar products that have been circulated, PT Redceri Indonesia gives added value of this new product. Competition entered quite large, the company tried to do a marketing strategy planning to sell this product so that it can be accepted by the community or consumer.
METHODS OF RESEARCH

A description of the marketing strategy planning and marketing mix PT Redceri Indonesia refers to the organizational planning framework as follows:

![Planning Sequence Diagram]

Figure 1 – Three Levels of Organizational Planning (William J. Stanton, Fundamentals of Marketing, 10th Edition)

In the company marketing plan includes 5 (five) stages of the process, i.e. as follows: conduct a situation analysis; develop marketing objectives; choosing a target market and measuring market needs; determining the position (Positioning); designing a marketing mix strategy.

RESULTS AND DISCUSSION

Situation analysis is conducted by the company to understand the marketing environment towards the products offered. The marketing environment consists of fruit combining business people and outside marketing forces that can influence marketing management’s ability to develop and sustain successful transactions with its targeted customers.

Intensity of rivalry, not only PT Redceri Indonesia which produces food or beverage types of fruit combining in packaging to customers in Indonesia. Based on the analysis of strategic groups, there are currently 3 (three) fruit combining manufacturers who selling their products in Indonesia such as Tarami Corporation Japan, Tutto Company Ltd. Korea, and Sun Moon Food Company Ltd. Singapore refers to the analysis that makes them a major threat to PT Redceri Indonesia’s market segment. Some of the strategies that the company performed to win the competition and survive is to determine how to improve the quality of products that produced, taste, and service to consumers well by trying new ways and new product innovations that increasingly more to attract customers. In addition, the company pricing strategy by pressing product prices through the utilization of distribution cost increment issued by the competitors so as to attract as many consumers in the market without lowering the quality of the product.

Currently, many local producers who only focus on producing jelly potentially become a competitor for PT Redceri Indonesia. However, this does not necessarily make jelly producers easily enter the fruit combining industry because it will get a lot of difficulty in entering the market, especially the problem of processing technology.

The availability of many substitute products will limit the flexibility of players in the industry to determine the selling price of the product. The substitute product will be one of the threats to the products offered by the company such as fruit yoghurt, fruit juice, and candied fruit.
Market growth, the growth of per capita fruit consumption value in Indonesia each year has increased by 14.85%. In 2016, the projected value of money circulating in the community for fruit consumption reaches more than 74 trillion Rupiah.

Table 1 – Projected Expenditure Increasing per Capita Consumption of Fruit, 2015-2020

| Year | Total Expenditures Per Year (Rp) | Consumption Rate (%) | Fruit consumption per capita (Rp) |
|------|----------------------------------|-----------------------|----------------------------------|
| 2010 | 1,416,358,027,032,000            | 2.46%                 | 34,842,407,464,987               |
| 2011 | 1,723,934,003,097,600            | 2.46%                 | 42,408,776,476,201               |
| 2012 | 1,865,042,051,745,600            | 2.46%                 | 45,880,034,472,942               |
| 2013 | 2,100,704,535,049,200            | 2.46%                 | 51,677,331,562,210               |
| 2014 | 2,348,255,448,883,200            | 2.46%                 | 57,767,084,042,527               |
| 2015 | 2,664,432,341,415,940            | 2.46%                 | 65,545,035,598,832               |
| 2016 | 3,022,050,663,731,970            | 2.46%                 | 74,342,446,819,806               |
| 2017 | 3,426,378,625,141,230            | 2.46%                 | 84,288,914,178,474               |
| 2018 | 3,883,326,569,827,500            | 2.46%                 | 95,529,833,617,757               |
| 2019 | 4,399,533,773,714,140            | 2.46%                 | 108,228,530,833,368              |
| 2020 | 4,982,470,086,779,580            | 2.46%                 | 122,568,764,134,778              |

Processed from the results of the National Socioeconomic Survey (Susenas); Quarter I-2012, I-2014, BPS.

This is a great potential in the utilization of fruits offered to the community in different forms. With such growth value and with the abundant supply of fruit and not yet utilized, is an opportunity for companies to run this business.

The fruit combining industry has an important role for the national food industry, especially in fulfilling the fruit demand, especially the need for vitamins. The percentage of fruit as a source of vitamin is 4.26% of all common food ingredients consumed.

![Market Segmentation Steps](Source: William J. Stanton, Fundamentals of Marketing, 10th Edition)

The level of consumption of fruit is very large, this is a potential market for PT Redceri Indonesia. The availability of fruit combining is still limited, because the existing producers are still limited from abroad or imported products. In addition, the public difficulty in finding fruit combining that can provide assurance from the quality, halal and affordable prices. Fruit combining that existing today is still quite expensive and has a taste that is less suitable for the people of Indonesia.

Market access, the company as effectively as possible managing access strategy enters the market for the success of the company's overall business model. Applying the right market access strategy is supported by the specific tools needed to manage the sales network in the company's distribution system. In addition, the success rate of entry into the market really depends on the competitive advantage of the fruit combining products offered by the company.

In the early stages of production, PT Redceri Indonesia entered the market through two ways of marketing, namely indirect sales and direct sales. Indirect sales, the company sell the products through food and beverage distributors, while the direct sales through cooperation with Indomaret retailers or hospitals.

Determination of the marketing objectives to be achieved by the company must be in harmony with the vision, mission and strategy that the company sets and must be able to translate the strategy and goals of the company's organization. The first objective is within
the next five years to become a market leader in the food and beverage industry that creates natural products in the marketing areas of Jakarta and Banten, has a strong distribution channel and builds strong brand awareness, and reaches 15.52% Return of Investment in the first year (Y-1) of the total sales revenue and change the salary payment system of all sales marketing employees from salary compensation base to sales commission base, it aims to motivate the increase of selling rate of products offered.

Market segmentation and market diversity are two interrelated concepts. Without a diverse market of people with different backgrounds, countries of origin, interests, needs, and desires, there is little reason to market segmentation.

Before the acceptance of the broad marketing concept the common way to do business with consumers is through mass marketing, which is the same product offering or marketing mix to everyone. Market segmentation follows as a more logical way to meet consumer needs.

Market segment, buyers have unique needs and desires, potentially, each buyer is a separate market. To that end, the company determines the market segment based on income groups and age groups.

In the group of earnings the company takes the market segment for groups of people with middle income upwards. As for the age group the company sets the market segment for the age group of 5 (five) to 49 (forty-nine) years. The variable determination of market segments of the company can be classified as follows:

| VARIABEL | KETERANGAN |
|----------|------------|
| Geografis | Wilayah | Jakarta dan Banten |
|          | Luas Wilayah | 7.659 Km² dan 9160 Km² |
|          | Populasi | 9.988.329 dan 10.469.523 jiwa |
|          | Pemerintah | Propinsi |
|          | Iklim | Kemarau dan Penghujan |
| Demografis | Umur | 5 - 49 tahun |
|          | Jenis Kelamin | Pria - Wanita |
|          | Ukuran Keluarga | 1-2, 3-4, 5+ |
|          | Pendidikan | Sekolah Dasar - Perguruan Tinggi |
| Psikografis | Kelas Sosial | Menengah ke atas |
|          | Gaya Hidup | Achievers |
|          | Kepribadian | Suka berteman |
| Perilaku | Kesempatan Belanja | Kesempatan tetap |
|          | Manfaat Yang Dicari | Kualitas dan Ekonomis |
|          | Tingkat Kesempatan | Menyadari |
|          | Sikap Terhadap Produk | Antusias dan Positif |

Geographical segmentation, in the early stages of marketing the company set the market share in the Jakarta and Banten areas. With the population growth rate in the region reaching 2.1% per year. In addition, the company determines the effect of climate on its marketing mechanism. Based on market behavior, for food and beverage products with the content of fruit or juice will increase demand during the dry season and tend to decline during the rainy season.

Demographic segmentation, on this assignment the company offers its products for the 5-49 years age segment, because the products offered are designed to suit the particular needs of a particular age segment. Redceri Pure Fruit Jelly products use native fruit instead of fruit juice so it is not suitable for less than 5 years old that have not been able to chew. In addition, this product also uses pure sugar that is not suitable for the market segmented age over 49 years related health issues about excess sugar consumption that causes diabetes. In addition, the company does not include or specific designation of segmentation based on gender, educational level and family size. This is because Redceri Pure Fruit Jelly products offer general products with the benefit of consuming fruit and fiber consumption.

Psychographic segmentation, people's purchasing power dependence still has a strong influence in preference to the desire to buy a product. To that end, the company sets its market segment for upper middle-class social class by building traits that can attract the interest of the class society such as strengthening brand awareness in the form of packaging
or display and the quality of class products. When compared with the original fruit, the culture of the people in consuming fruit combining fruit is still not popular. However, with the modern lifestyle changes that want practicality, there is a special market segment that is large enough to work on. This is evident from the number of fruit consumption from year to year increased and reached the number of tens of tons. Specific market segment in question is the market segment that does have a passion and taste to consume fruit with more practical and easy to get (Customer Familiarity). In addition, the attraction of people to the goods is influenced by lifestyle and the goods are able to express the lifestyle. Companies are trying to improve market segmentation based on consumer lifestyles as well as certain community groups. Redceri Pure Fruit Jelly is positioned as the ideal food product for healthy, natural, halal and active or mobile lifestyle. Finally, PT Redceri Indonesia is targeting achievers as a marketing appeal of its products.

Segmentation of behavior, consumers can be grouped according to knowledge, attitude, use, and response to a product. Of the trusted behavior variables are the best starting point for building specific market segments. Indonesian people have a habit of consuming fruit only at lunch, for that company needs to build a brand image that the product offered can be consumed throughout the day. In addition, the company uses the benefit segmentation to position the Redceri Pure Fruit Jelly product as halal, healthy and economical. This is useful for building consumer awareness of healthy living as well as enthusiasm and positive responses to the products that the company has to offer.

Target market, based on market segmentation that has been done, company set main target market is age group of 10-29 years with middle social class and above. This is set to simplify the marketing communication pattern of Redceri Fruit Jelly products at an early stage. The target setting is described as in the table as follows:

| Kelompok Umur | Gender | Sosial Ekonomi | Menengah | Atas |
|---------------|--------|----------------|----------|------|
| 5-9           | Pria   | 9.423,80       | 4.735,46 | 4.688,34 | 4.711,90 | 2.367,73 | 2.344,17 |
|               | Wanita | 9.030,04       | 4.536,03 | 4.492,14 | 4.515,42 | 2.369,00 | 2.246,40 |
| 10-14         | Pria   | 8.864,40       | 4.494,34 | 4.410,04 | 4.432,30 | 2.277,18 | 2.285,09 |
|               | Wanita | 8.827,69       | 4.395,37 | 4.252,23 | 4.313,80 | 2.187,68 | 2.146,12 |
| 15-19         | Pria   | 9.024,56       | 4.203,19 | 4.161,37 | 4.182,18 | 2.191,60 | 2.080,68 |
|               | Wanita | 9.196,80       | 4.119,99 | 4.078,90 | 4.099,45 | 2.059,95 | 2.039,45 |
| 20-24         | Pria   | 9.174,60       | 4.007,26 | 3.967,36 | 3.987,30 | 2.033,62 | 1.983,68 |
|               | Wanita | 9.244,72       | 3.740,47 | 3.703,25 | 3.721,86 | 1.870,23 | 1.851,63 |
| 25-29         | Pria   | 9.052,80       | 3.345,08 | 3.314,74 | 3.331,40 | 1.674,03 | 1.657,37 |
|               | Wanita | 9.122,90       | 3.248,06 | 3.216,74 | 3.233,40 | 1.624,03 | 1.607,37 |

Source: Processed from BPS data in 2014.

From the table 3, the age group of 10-29 years (yellow mark) reached 62.36% of the total market segment 5-49 years age group with middle and upper social class. Companies in the early stages of using an undifferentiated marketing strategy with one offer to enter the market. Redceri Pure Fruit Jelly’s product offerings will focus on the general needs of consumers, not to differentiate. This is done by the company at an early stage to make cost savings such as similar product lines keeping production, inventory and transportation costs low.

However, the company will keep in mind the product life cycle stage, for which the company strengthens the Research and Development Division to conduct market research and product development based on the segmentation that has been done. Currently, competitors in the market still use all-round marketing.

Positioning is an action in shaping the image in the minds of consumers (Kotler, 2006). In the positioning statement there should be a formula established on: Target Segment - an explanation of the segment targeted by the company, Brand Name - the name of the product offered, Frame of Reference - the product category offered, Point of Differentiation - the
uniqueness of the offered product compared to Products of the same category, and Reason to Believe - evidence to reinforce the uniqueness of the product offered (Tybout & Calkins, 2005).

Based on it, the company tries to shape the product image with product Tagline for Redceri Pure Fruit Jelly's is 'Your Pure Fruit Jellycious', while its Positioning Statement is 'Untuk masyarakat Indonesia yang sehat, Redceri Pure Fruit Jelly adalah fruit combining kombinasi jelly dengan buah-buahan segar sebagai asupan vitamin yang halal, praktis dan rasa yang berbeda karena hanya Redceri Pure Fruit Jelly produk dalam negeri yang di proses secara higienis dan modern'.

Marketing mix is a marketing strategy used by a company to market Redceri Pure Fruit Jelly products. As for the marketing of its products, the company establishes two marketing mechanisms namely direct sales through cooperation with retailers or hospitals with the concept of business to customer (B2C) and sales through cooperation with distributors with the concept of business to business (B2B). To be able to enter into the sales of fruit combining to such parties, the company notices several things such as: product - hygienic and gives clear benefits and prices - as a substitute product no more expensive price of substituted goods.

Marketing strategy for direct sales through cooperation with retailers or hospitals or B2C concept using 4P (Product, Place, Price, Promotion). The translation of these strategies is:

Product, according to Kotler: in planning product offerings to customers should have five levels that each level gives more value to customers. Five levels are Product Core Benefit, Basic Product, Expected Product, Augmented Product and Potential Product.

For Redceri Pure Fruit Jelly are as follows: Product Core Benefit: Fruit Combining fruits and jelly; Basic Product: natural, halal and practical in enjoying the fruit; Expected Product: the freshness of the fruit is maintained and the taste fits with the tastes of the people of
Indonesia; Augmented Product: attractive, clean and hygienic packaging; Potential Product: Orange and Carica flavors.

![Figure 4 – Five Levels of Product (Source: Kotler 2003:408)](image)

Product specification form, Redceri Pure Fruit Jelly is packed in a natural PP (polypropylene) cup. Product weight per cup is 110 grams, and each product comes with a spoon of jelly. Redceri Pure Fruit Jelly is marketed there are two types of flavor: Orange and Carica.

Product packaging, Redceri products will be packed in a natural PP (polypropylene) cup and covered with lid cup PE (polystyrene) in printing the logo and product type. The Redceri product is packed in a corrugated carton with the contents of each carton 24 cups.

Product advantages, Redceri products compared with fruit combining others is more fruit content, halal, and taste that suits the tastes of the majority of Indonesian people.

Logo design, so that the product is easy to remember and give a positive impression so that the company can communicate the right promotional strategy target, to create high brand awareness. The Redceri product logo design is as follows:

![Figure 5 – Logo Design](image)

Place, for B2C's Redceri product marketing, the company will distribute itself from direct production to parties such as a retailer or a particular hospital using its distribution fleet. Based on the purchase order of the parties, the company will process the existing request and make direct delivery using the prepared distribution fleet.

Price, in setting product prices using Cost plus Pricing Method pricing strategy, i.e. pricing based on total cost by adding profit. This is done by the company to penetrate the market that is currently dominated by imported products with a relatively expensive price. This can provide more value through improving the quality of products and services better than competitors, and also later with the brand will add value to the product even if the price set is not higher than the competitors. The price set by the company is Rp 7,450, - / cup including Vat. The price is for the first year and made fixed (not fluctuating), for the second year and subsequently adjusted for inflation plus other factors because the fruit combining Redceri has become known by the public. The company also applies HET (Highest Retail Price) with the aim of the consumer can get a reasonable price. The highest retail price currently applied is Rp 7,450, - / cup and Rp 178,800, - / box.

In addition, the company offers discounts for cash discounts of up to 3% of total purchases. Being for decision makers at these agencies, in order to create long-term
relationships the company provides a budget of 5% of total purchases in the form of entertainment and the provision of fees (incentives).

Promotion, promotional activities are aimed at informing, persuading, or influencing consumers to use the products produced by the company. Promotional activities undertaken by the company is the spread of flyer, radio advertising and digital marketing.

One of the promotional activities undertaken by the company through digital marketing that is by utilizing electronic media for the purpose of promoting, marketing, and others.

Increased internet users today become something that should not be ignored by the business. The advantage of going through digital marketing is the product or service that we sell can be recognized by many people.

Based on the description, the company will implement some promotional strategies through digital marketing as follows:

| Table 4 – Digital Marketing Strategy |
|-------------------------------------|
| **Strategy** | **Description** |
| Building a Website | The website is defined as our home. Products or services can be carried out with the ease of use of the theme. The website can also be a medium for the target audience to promote the company and products. PT Redceri Indonesia.
| | The menu on the website are namely: Koffee, Postal, like, place of sale, online purchase, and others as suggestions. |
| Building Online Presence (BrandingOnline) | For the purpose, PT Redceri Indonesia use native advertising, a form of content marketing where the content can reach the user as in a search by playing an advertisement to the user so that they do not know when using the internet. |
| | In some for the website of PT Redceri Indonesia is to be weekly “hour” and “viewed” by Search Engines, the company targets relevant keywords so that the company’s website can appear according to the needs of internet users such as: Food Concepting, Fruit Concepting, July, Healthy Diet, and others.
| Use of Search Engine | PT Redceri Indonesia uses social media that are widely used such as Facebook, Twitter, Instagram, LinkedIn, and other social media to make it easier for customers to see digital marketing. |
| Use of Social Media | PT Redceri Indonesia uses social media that are influential in disseminating information regarding the brand, portfolio, services and other important things from the company. |
| Use of Email | |

Marketing strategy for indirect sales through cooperation with food and beverage distributors or B2B concepts using NICE approach (Networking, Interaction, Common interest, Experience). The translation of these strategies are:

Networking, by establishing networks between companies and distributors in each region to facilitate the opening of distribution channels in the target market area. To that end, the company to explore the distributors who are in Jakarta and Banten region with mutually beneficial cooperation. The food and beverage distributors such as PT Intrasari Raya in Jakarta and PT Era Gading Baharu in Tangerang become partnership company to build marketing network of Redceri Fruit Jelly products. Distributor distributors become parties that will distribute to third parties up to end customers.

Interaction, the company creates communication and good relationship with the distributor in introducing the products that the company has to offer. This communication is also related to the service to the order and ease of handling the claim of the product defect.

The marketing and sales team of the company will communicate the product of Redceri Fruit Jelly by direct door to door product exposure to every food and beverage distributors that are the target partners in opening the marketing network.

Common Interest, the company tries to establish relationships and mutual relationships with distributors, especially decision makers through personal approaches. One of them is the provision of sales commissions and annual rewards against sales targets given to each distributor.

To build long-term partnership with distributors, the company has prepared a total budget of 8% of the related sales budgeted from 3% discount cash sales and 5% of the costs of entertain. This budget is issued for the achievement of sales targets in the form of commissions, fees and annual rewards.

Experience, strategy in deepening product knowledge of products offered to support product introduction process to distributor. Every sales and marketing personnel from PT
Redceri Indonesia should be able to understand the products offered both in terms of product benefits, benefits gained, and product handling.

To maintain and keep customer loyalty, PT Redceri Indonesia needs to design a sales blueprint in serving customers. Sales blueprints are sales guides to consumers systematically illustrated, from first time in touch with brands to after sales. Sales blueprints can be developed for brand owners who are just getting started or for improvisation.

Sales blueprint can be a reference or standard operation procedure (SOP). In the sales blueprint, the company measures the sales success of the five dimensions of sales effectiveness: (1) Company Results; (2) Customer Results; (3) Activities; (4) Salespeople; (5) Sales Effectiveness Drivers.

![Image](image.png)

Figure 6 – Relationship between Dimensions Sales Organization (Source: Andris A. Zoltners, Prabhakant Sinha, Sally E. Lorimer, Building A Winning Sales Force, 2009)

Company Results, on this dimension the company focuses on goals or outcomes for the company. The results to be achieved are as follows: Market share in the first year of 5% of the total fruit demand in the area of Banten and Jakarta, with a sales value of 71, 6 billion; Target profit in the first year of 4.8 billion or 6.69% of total sales; Return of Investment which become target company is 15.52% per year; Marketing cost of 31% of total sales per year.

The sales proceeds will be evaluated and rewarded for the achievement of the goal, and the result is the most visible and objective indicator of success. Company results are the organization's financial results, in which the sales force's efforts play a major role. These results can be measured using sales, profits, market share, return on investment, or some other metric, and can be expressed as absolute levels, percentage of goal achievement, or growth over the past year. This is useful for evaluating outcomes from short and long term perspectives, as decisions involving salespeople affect both.

Customer Results, in this dimension the company focus on the results or benefits to be gained by consumers. Sales force activity at this stage is to build good relationships and customer trust, as well as build a loyalty bases on the products offered. The steps taken are:

- Establish communication and good relationships with distributors when introduce the products that the company has to offer;
- Providing services to orders and ease of handling claims for problematic products;
- Direct door to door product exposure to each distributor of food and beverage that is the target partner in opening the marketing network;
- Promotion of products, to inform, persuades, or influence consumers to use products produced by the company;
- Personal approach by giving sales commissions and annual rewards to sales targets given to each distributor and giving gifts to end users such as sweepstakes or prizes directly.

The results of the customer affect the company's results; therefore the company measures customer outcomes by using customer satisfaction scores and customer retention rates or repeat sales to assess how customers view sales organizations. Customers will not buy from people they do not like.

Activities, in this dimension, the company emphasizes salespeople to effectively allocate their time and ensure that every activity is of high quality and value. The steps taken by PT Redceri Indonesia's sales force are as follows:

- Salespeople serve our best customers well;
• Salespeople spend a lot of time with customers and keep the administrative work to a minimum;
• Quality of sales force activity is as important as quantity.
Salespeople’ activities are usually organized into a multistep process that includes steps such as lead generation, needs analysis, solution development, proposal presentation, negotiation, installation, customer service, and maintenance and marketing expansion. Sales force activity encourages customer results.
Salespeople, in this dimension PT Redceri Indonesia’s sales force are formed to have the ability and mindset as follows:
• Salespeople are the spearhead of the company;
• Salespeople must have knowledge of products, customers, and competitors very well;
• Have the right values, attitudes, and abilities;
• Want to learn and develop new skills;
• Be able to adapt when new sales process arises;
• High performance turnover is very low.

Companies seek to employ competent and motivated salespeople and build a ‘success’ culture to direct them to demonstrate effective behavior and engage in effective activities. Sales force PT Redceri Indonesia is a strong revenue driver for the company, so salespeople is the most important asset of the company because of its relationship with the customer that determines the company’s success.
Sales Effectiveness Drivers, in this dimension the company focuses on decisions, processes, systems, and work programs of salespeople. The drivers of PT Redceri Indonesia’s sales force are:
• Definer Drivers:
  These drivers determine the organizational structure of sales force, number of sales force and territory design. In the early stages of production of PT Redceri Indonesia the marketing focus in Banten and Jakarta. Based on that territory marketing of PT Redceri Indonesia product is divided into two marketing areas namely Banten and Jakarta. The number of marketing personnel for each region is 1 person sales force and 1 person marketing staff. For the marketing division is headed by a Manager, namely Marketing and Sales Manager. Structurally, the manager is responsible for the performance of marketing personnel. Sales and marketing personnel will provide performance reports, market developments, and matters related to the company's marketing to managers.
• Shaper Drivers:
  These drivers form the skills, abilities and values of sales people / key person through:
(1) Recruiting, for marketing personnel and sales force at least D-3 education while for minimal manager of S-1 education with technical skills such as computer mastery, communication, Selling skills and good analytical skills. (2) Learning and development, to support the personal abilities of corporate salespeople provide training such as interpersonal skills, effective communication skill, business law and other related training. (3) Culture, embedded culture: 'Quality first, working hard and family number one' from a sales standpoint. (4) Sales Management Team, it aims to create High Impact Sales Management and Strategy. (5) Coaching, training by bringing in marketing or senior sales to become a role model, and sharing the real experience of why he / she can be the best (in terms of sales). (6) Leadership, has the ability to lead, firm in making decisions and responsible for decisions taken.
• Enlightener Drivers:
  In these drivers the company seeks to provide and provide useful and supportive information for salespeople such as consumer research, target markets, data and sales tools, and CRM (Customer Relation Management). The company also provides budget in supporting marketing process such as market surveys, impact studies and corporate branding by cooperating with third parties.
• Exciter Drivers:
   These drivers aim to motivate and encourage salespeople to work hard and achieve company goals. To encourage and motivate the sales force, the company does several ways such as providing compensation and incentives when sales targets are achieved, as well as providing motivational programs to salespeople.

• Controller Drivers:
   PT Redceri Indonesia needs a control system to support its marketing process. The control system is used to ensure that salespeople, most of who work unattended, continue to do what they should do from time to time. These drivers direct the activity and behavior of sales force, to determine sales performance by setting targets, forecasting, reporting mechanisms, coordination and communication.

CONCLUSION

Figure 7 – Sales System PT Redceri Indonesia

The overall picture of the activity of marketing strategy implementation of PT Redceri Indonesia is depicted in Figure 7 of company's sales system.

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EFFECT OF RELIGIOSITY, PREVENTION FOCUS, FUTURE ORIENTATION, AND FINANCIAL KNOWLEDGE ON PURCHASE INTENTION TO LONG-TERM INVESTMENT IN SHARIA INSURANCE

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ABSTRACT
This research aims to examine the effect of religiosity on purchase intention to long-term investment in sharia insurance which is moderated by prevention focus, future orientation, and financial knowledge. This research applies a non-hierarchical analysis method or cell mean method using between subject 2×2 and the procedure of Univariate General Linear (GLM) Model. The first research finding found that religiosity has significantly affected purchase intention to long-term investment in sharia insurance; thus, H1 has supported the hypothesis. The second finding showed that high religiosity which is moderated by low prevention focus increases purchase intention to long-term investment in sharia insurance; thus, H2a has supported the hypothesis. However, religiosity which is moderated by high prevention focus does not support the hypothesis, thus, H2b and H2c are not proven. The third finding found that religiosity which is moderated by future orientation has shown very significant result, thus, the H3a, H3b, and H3c hypotheses have been proven to support the hypothesis. The fourth findings showed that high religiosity which is moderated by low financial knowledge has been proven to affect purchase intention to long-term investment in sharia insurance; so, H4a has supported the hypothesis. However, religiosity which is moderated by high financial knowledge has not supported the hypothesis; thus, H4b and H4c is not proven.

KEY WORDS
Religiosity, prevention focus, future orientation, financial knowledge, purchase intention.

Nowadays, the world of Indonesian insurance faces considerable challenges with the presence of many foreign insurance companies as a direct impact of globalization. In addition, in this globalization era, Indonesian insurance and reinsurance companies will face the presence of foreign insurance or reinsurance companies that have strong capital and reliable technology and human resources. In addition, they also have the opportunity to operate and develop the insurance or reinsurance business in other countries besides Indonesia (Ramadhani, 2015). In dealing with the current of globalization, the positive thing that we can examine is that there is healthy competition which will gradually make the development of sharia insurance increase globally. More and more Islamic banks are implementing sharia principles; i.e. the banking system that does not lend or collect loans with interest loans (usury) and has a prohibition to invest in illegitimate businesses according to Islamic teachings. The Financial Services Authority (OJK) has recorded data of April 2017 which stated that the market share of sharia insurance in Indonesia is still very low; i.e. 3.45% of the total compulsory insurance and social insurance. National sharia insurance assets reached IDR 34.3 trillion. Meanwhile, conventional insurance assets reached IDR 958.06 trillion. Then, the combined total assets reached IDR 992.34 trillion. Based on previous OJK data, the authors found the instability of the market share of sharia insurance in Indonesia, which declined compared to total assets in 2014 of 4.5% and 2015 of 5.2%.

According to data from the World Bank Global Islamic Finance Development Center in 2016 presented in Chart 1.1, Indonesia is in the 10th position with total assets of 1.6%. Meanwhile, first, second and third positions are Iran 37.3%, Saudi Arabia 19%, and Malaysia...
9.3%. Based on the above information from Table 1.1, Table 1.2, and Chart 1.1, we can see the gap between the Muslim population in Indonesia and the total ranking of sharia economic assets. Indonesia, with the largest Muslim population in the world, is only ranked 10th in total assets. Meanwhile, Iran, with a total Muslim population of one third of Indonesia, ranks first in the world for its total Islamic assets.

Based on the results of a national survey on financial literacy from OJK, in the 2013 period, concerning Indonesia National Strategy for Financial Literacy, the Insurance Literacy Index shows that well-educated Indonesians only accounted for 17.84% of the population in the insurance industry. It means that for every 100 people, there are only 18 people understand about insurance. Low insurance literacy rates contribute to low insurance products and services, which are only 11.81%. This means that in every 100 people, there are only 12 people use insurance products and services. The low level of insurance literacy has become a challenge for financial and banking business actors in regulating their marketing strategies.

Based on a research conducted by Newaz et al. (2016) entitled “Muslim Religiosity and Purchase Intention of Different Categories of Islamic Financial Products” it was found that it is positively affected purchase attitude and intention in Islamic financial products. Regarding the product category, religiosity has a positive and significant effect on purchase intention to deposit products, credit and the Islamic capital market. On the contrary, religiosity has no significant effect on purchase intention to sharia insurance. Research conducted by Howlett et al (2008) has examined the role of self-regulation, future orientation and financial knowledge on long-term financial decision. Long-term financial decision, in this case, relates to the investment decisions of financial products by comparing investment with high-risk mutual funds and pension funds or what so-called Old Age Allowances in Indonesia and known as pension investment K401 known in America. The findings of their research generally are that self-regulation, future orientation and financial knowledge significantly support their hypotheses and prove that low self-regulation will reduce intention to contribute to pension funds. However, that is contrary to the findings of mutual funds in which low self-regulation increases purchase intention to mutual funds.

Based on the authors’ explanation above, there are two phenomena that underlie this research. The first is the demographic background related to the gap between the Muslim population in Indonesia which is not in line with the growth of sharia insurance and the OJK survey of financial literacy levels that are considered to be not optimally in line with the development of sharia insurance. The second phenomenon is the gap of the two previous research articles which shows that the level of religiosity does not support purchase intention to sharia insurance and the role of low self-regulation has supported long-term mutual fund investment decisions. From the two main phenomena described above, the authors intend to examine the effect of the religiosity variable which is moderated by the prevention focus and future orientation variables on purchase intention variable with the title “effect of religiosity, prevention focus, future orientation, and financial knowledge on purchase intention to long-term investment in sharia insurance.”

In this research, the authors find the gap from the two main articles used as the basis for this thesis. The gap from the first article written by Newaz et al (2016) is about the correlation of religiosity which is moderated by purchase attitude which has a positive effect on the purchase intention of different categories of Islamic financial products. Their research gap stated that religiosity has not supported sharia insurance decision making. The second gap is based on the Howlett et al (2008) article which found that low self-regulation has been proven to affect customers in supporting retirement funds. However, low self-regulation does not affect the increase in mutual fund investment. Their findings cannot prove their hypothesis that low self-regulation will increase mutual fund investment. Based on the two gaps of the article, the authors want to examine the effect of religiosity on purchase intention to sharia insurance in particular and at the same time use the prevention focus, future orientation and financial knowledge variables as the moderation of the religiosity variable.

Based on the description in the background, this research aims to get explanation that can answer the following matters: (1) the effect of religiosity on purchase intention to long-
term investment in sharia insurance and (2) that religiosity variable moderated by prevention focus, future orientation, and financial knowledge will increase purchase intention to long-term investment in sharia insurance.

METHODS OF RESEARCH

The research design applies descriptive qualitative method; i.e. a research that gives a careful description of a particular individual or group of conditions and symptoms (Koentjaraningrat, 1993). This research applies a relevant statistical model that will be presented as a cell formed or formed based on a particular characteristic based on sample data and the population under review (Sukmadinata, 2007). The advantage of analyzing the cell means model is that it is easily done manually and has a standard form. Therefore, it is easy to apply to all fields of study. The simplest and most easily understood cell model is a tabulation that is also called a cell means table. Descriptively, the cell means table presents the average value or mean score of the response variable, the non-independent variable or the causal variable (endogenous, dependent or downstream variables) that is numeric in scale. It includes the Likert scale according to several causal factors or independent variables (exogenous, independent or source variables) that are nominal or ordinal (Gunawaha, 2013).

The analytical method used to test the research hypotheses is the cell means method. Data analysis basically aims to study the difference in mean response variables or indicators of certain problems between groups of individuals including in testing hypotheses about these differences in the population under review. Cell means functions have reciprocal correlation with cell means tables; i.e. a table that presents the means (average) non-independent variable or indicator of a particular problem according to a factor or multifactor (Nugraha, 2014).

This cell means test applies the General Linear Model (GLM) procedure to test the null hypothesis that some groups of data samples have the same value or mean score. The application of the General Linear Model (GLM) Univariate procedure aims to test hypotheses about: 1) the characteristics of homogeneity; 2) differences or similarities of all mean parameters under review; 3) differences in several pairs of mean cell parameters; 4) the effect of the main factors and interaction factors on response variables, especially those that cannot be tested by applying the One-Way ANOVA procedure (Pramesti, 2007). It is necessary for General Linear Model (GLM) procedure of Univariate, by using statistical software, to analyze the General Linear Model Univariate, then enter the dependent variable and fix factor which is the coding of the religiosity, prevention focus, future orientation, financial knowledge, and purchase intention variables. Then, it is processed in a parameter estimate in statistical calculations.

The non-hierarchical ANOVA model can be written as follows: a model that contains the main factor A and an interaction factor A*B. This model has the following equation:

\[ Y_{ijk} = \mu + A_i + (AB)_{ij} + \varepsilon_{oi} \]

Where: \( \mu \) = the parameter of mean population or general mean; \( A_i \) = the parameter of the effect of the i level of the FA factor; \( B_j \) = the parameter of the effect of the i level of the FB factor; \( (AB)_{ij} \) = the parameters of the effect of the interaction factor \((ij)\), with terms of \( \Sigma i 0 \) and \( \Sigma j 0 \), \( (B)_{jj} \) 0.

This test aims to find out the differences in the consequences caused by the manipulations of different independent variables (Jayanti, 2018). This test indicates that each combination of manipulations will produce different consequences. Then, it generally indicates that the combination of variables of degree of religiosity, self-regulation, prevention focus, future orientation, financial knowledge (low and high) will result in the different purchase intention to sharia insurance.
The population of this study was all students of Esa Unggul University, Citra Raya
Tangerang, Indonesia. The consideration is that the research population of all Esa Unggul
University of Citra Raya students is quite numerous and heterogeneous. Thus, the authors
take a sample of 81 students using purposive sampling method which means the sample is
chosen based on certain criteria. Determination of these criteria includes: embracing Islam,
having the same average age, having the same level of education to obtain homogeneous
data and represent the population. The respondents are 120 undergraduate students at Esa
Unggul University. The respondents are Muslim, aged 18-24 years, and have a minimum
education level of high school.

RESULTS OF STUDY

Determination of the average score or median split of the religiosity, purchase intention,
and the focus prevention variables aims to divide the groups in cells from the respondents
under research. The median split determination is obtained from 120 data which the value of
each variable needs to be known. Religiosity, purchase intention and prevention focus
variables are tabulated and the median split is calculated using statistical software. After
obtaining the median split scores from the religiosity and prevention focus variables,
respondents are categorized as high religiosity (higher than median split) with number 1 and
low religiosity (lower than median split) with number 2. Besides, in the prevention focus
variable, the respondents are included in the perception group of high prevention focus
(higher than median split) with number 1 and low prevention focus (lower than median split)
with number 2.

From the 120 research respondents, there are 61 respondents who have high
religiosity and 59 respondents who have low religiosity. Moreover, 61 respondents have high
prevention focus and 59 respondents have low prevention focus; as shown in the following
table:

Table 1 – The Statistics of Median Split

|      | N Valid | Rel. Code | PF. Code | Intention |
|------|---------|-----------|----------|-----------|
| Median | 0.355 | 0.0516 | 0.0498 |

Source: test results on data analysis tools.

Table 2 – Between Subject Factors

| Value Label                  | N   |
|-----------------------------|-----|
| Median of Religiosity       | 1.00| 61  |
| Median of Prevention Focus  | 2.00| 59  |
| Median of Prevention Focus  | 1.00| 61  |
| Median of Prevention Focus  | 2.00| 59  |

Source: test results on data analysis tools.

Analysis of Research Results on Religiosity and Prevention Focus Variables on
Purchase Intention to Long-Term Investment in Sharia Insurance Using Cell Means
(Hypothesis 1 and Hypothesis 2 Testing):

H1: higher religiosity has higher purchase intention to long-term investment in sharia
insurance;

H2a: for low prevention focus group, high religiosity group has higher purchase
intention to long-term investment in sharia insurance compared to low religiosity group;

H2b: for low religiosity group, high prevention focus group has higher purchase
intention to long-term investment in sharia insurance compared to low prevention focus
group;

H2c: for high prevention focus group, high religiosity group has higher purchase
intention to long-term investment in sharia insurance compared to low religiosity group.
The basic of decision making:
1. If the Sig. value < 0.05, H1 is accepted;
2. If the Sig. value > 0.05, H1 is rejected.

In this research, to test hypotheses 1 and 2, design A(AB) is applied. Thus, in general, the regression equation for this test is as follows:

\[ Y_{ijk} = \mu + \text{REL}_i + (\text{REL}_i \times \text{PF})_{ij} + \epsilon \]

Prerequisite: \( \sum_i \text{REL}_i + 0 \) & \( \sum_j (\text{REL}_i \times \text{PF})_{ij} = 0 \), for all \( i \)

Where: \( Y_{ijk} = \) Purchase intention to long-term investment in sharia insurance; \( \mu = \) Constanta; \( \text{REL}_i = \) Religiosity; \( \text{REL}_i \times \text{PF}_{ij} = \) The interaction between religiosity and prevention focus; \( \epsilon_{ijk} = \) Error.

### Table 3 – Parameter Test of Between-Subjects Effects

| Source                     | df | F     | Sig.  |
|----------------------------|----|-------|-------|
| Corrected Model            | 3  | 11.051| 0.000 |
| Intercept                  | 1  | 0.082 | 0.775 |
| Religiosity_Code           | 1  | 33.146| 0.000 |
| PF_Code                    | 1  | 0.010 | 0.920 |
| Religiosity_Code * PF_Code | 1  | 0.007 | 0.935 |
| Error                      |    |       |       |
| Total                      |    | 120   |       |
| Corrected Total            |    | 119   |       |

Source: test results on SPSS 23 data analysis tools that were reprocessed (2018).

### Table 4 – The Results of \( \beta_1 \), \( \beta_2 \), and \( \beta_3 \)

| \( \beta \)  | Description                                                                 |
|-------------|-----------------------------------------------------------------------------|
| \( \beta_1 \) | For low prevention focus group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group. The intercept calculation table shows that there is a difference between \([\text{REL} = 1] [\text{PF} = 2]\) and \([\text{REL} = 2] [\text{PF} = 2]\) on purchase intention to long-term investment in sharia insurance that results \( \beta_1 \). The significant level of \( \beta_1 \) is 0.000<0.05 so that \( \beta_1 \) is significant. |
| \( \beta_2 \) | For low religiosity group, high prevention focus group has higher purchase intention to long-term investment in sharia insurance compared to low prevention focus group. The intercept calculation table shows that there is a difference between \([\text{REL} = 2] [\text{PF} = 1]\) and \([\text{REL} = 2] [\text{PF} = 2]\) on purchase intention to long-term investment in sharia insurance that results \( \beta_2 \). The significant level of \( \beta_2 \) is 0.4945>0.05 so that \( \beta_2 \) is not significant. |
| \( \beta_3 \) | For high prevention focus group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group. The intercept calculation table shows that there is a difference between \([\text{PF} = 1] [\text{REL} = 1]\) and \([\text{PF} = 1] [\text{REL} = 2]\) on purchase intention to long-term investment in sharia insurance that results \( \beta_3 \). The significant level of \( \beta_3 \) is 0.4675>0.05 so that \( \beta_3 \) is not significant. |

Source: test results on SPSS 23 data analysis tools that were reprocessed (2018).
The results of this test indicate that the variables to be studied have an effect on purchase intention. The hypothesis testing uses F-test statistics on the line “Rel_Code” with $F_0 = 33.146$ (Sig. 0.000) and free degree of 1/116. That indicates the Sig. value 0.000 < 0.05 which concludes that H1 supports the proposed hypothesis. It shows that religiosity affects purchase intention to long-term investment in sharia insurance.

Determination of the average score or median split of the religiosity, purchase intention, and the future orientation variables aims to divide the groups in cells from the respondents under research. The median split determination is obtained from 120 data which the value of each variable needs to be known. Religiosity, purchase intention and future orientation variables are tabulated and the median split is calculated using statistical software. After obtaining the median split scores from the religiosity and future orientation variables, respondents are categorized as high religiosity (higher than median split) with number 1 and low religiosity (lower than median split) with number 2. Besides, in the future orientation variable, the respondents are included in the perception group of high future orientation (higher than median split) with number 1 and low future orientation with number 2.

From the 120 research respondents, there are 61 respondents who have high religiosity and 59 respondents who have low religiosity. Moreover, 61 respondents have high future orientation and 59 respondents have low future orientation; as shown in the table 5:

| Table 5 – The Statistics of Median Split |
|----------------------------------------|
| n/n | Rel_Code | FO_Code | Intention |
|-----|----------|---------|-----------|
| N Valid | 120 | 120 | 120 |
| N Missing | 0 | 0 | 0 |
| Median | 0.355 | 0.127 | 0.049 |

Source: test results on data analysis tools.

| Table 6 – Between Subject Factors |
|-----------------------------------|
| Value Label | 1.00 | High | 63 |
| Religiosity_Code | 2.00 | Low | 57 |
| FO_Code | 1.00 | High | 61 |
| 2.00 | Low | 59 |

Source: test results on data analysis tools.

Analysis of Research Results on Religiosity and Future Orientation Variables on Purchase Intention to Long-Term Investment in Sharia Insurance Using Cell Means (Hypothesis 3 Testing):

H3a: for low future orientation group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group;

H3b: for low religiosity group, high future orientation group has higher purchase intention to long-term investment in sharia insurance compared to low future orientation group;

H3c: for high future orientation group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group.
The basic of decision making:
1. If the Sig. value < 0.05, H1 is accepted;
2. If the Sig. value > 0.05, H1 is rejected.
In this research, to test hypotheses 3, design A(AB) is applied. Thus, in general, the regression equation for this test is as follows:

\[ Y_{ijk} = \beta_1 + \beta_2 \text{REL} + \beta_3 \text{RELFO}_{ij} + \varepsilon \]

Prerequisite: \( \Sigma i \text{REL} + 0 \& \Sigma j \text{RELFO}_{ij} = 0 \), for all \( i \)

Where: \( Y_{ijk} = \) Purchase intention to long-term investment in sharia insurance; \( \mu = \) Constanta; \( \text{REL} \) = Religiosity; \( \text{RELFO}_{ij} \) = The interaction between religiosity and future orientation; \( \varepsilon_{ijk} = \) Error.

Table 7 – The Results of \( \beta_1, \beta_2 \) and \( \beta_3 \)

| B     | Description                                                                 |
|-------|---------------------------------------------------------------------------|
| \( \beta_1 \) | For low future orientation group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group.  
The intercept calculation table shows that there is a difference between \[ \text{FO} = 2 \] \[ \text{REL} = 1 \] and \[ \text{FO} = 2 \] \[ \text{REL} = 2 \] on purchase intention to long-term investment in sharia insurance that results \( \beta_1 \). The significant level of \( \beta1 \) is 0.006<0.05 so that \( \beta_1 \) is significant. |
| \( \beta_2 \) | For low religiosity group, high future orientation group has higher purchase intention to long-term investment in sharia insurance compared to low future orientation group.  
The intercept calculation table shows that there is a difference between \[ \text{REL} = 2 \] \[ \text{FO} = 1 \] and \[ \text{FO} = 2 \] \[ \text{REL} = 2 \] on purchase intention to long-term investment in sharia insurance that results \( \beta_2 \). The significant level of \( \beta2 \) is 0.012<0.05 so that \( \beta_2 \) is significant. |
| \( \beta_3 \) | For high future orientation group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group.  
The intercept calculation table shows that there is a difference between \[ \text{FO} = 1 \] \[ \text{REL} = 1 \] and \[ \text{FO} = 1 \] \[ \text{REL} = 2 \] on purchase intention to long-term investment in sharia insurance that results \( \beta_3 \). The significant level of \( \beta3 \) is 0.027<0.05 so that \( \beta_3 \) is significant. |

Source: test results on data analysis tools.

Table 8 – The Statistics of Median Split

Dependent Variable: Purchase Intention.

| n/n | Rel_Code | FK_Code | Purchase Intention |
|-----|----------|---------|--------------------|
| N Valid | 120 | 120 | 120 |
| N Missing | 0 | 0 | 0 |
| Median | 0.355 | 5.5 | 0.049 |

Source: test results on data analysis tools.

Table 9 – Between Subject Factors

Dependent Variable: Purchase Intention.

| Value label | N |
|-------------|---|
| Religiosity_Code | 63 |
| 1.00 | High |
| 2.00 | Low |
| FK_Code | 57 |
| 1.00 | High |
| 2.00 | Low |

Source: test results on data analysis tools of SPSS 23.

Determination of the average score or median split of the religiosity, purchase intention, and the financial knowledge variables aims to divide the groups in cells from the respondents under research. The median split determination is obtained from 120 data which the value of each variable needs to be known. Religiosity, purchase intention and financial knowledge variables are tabulated and the median split is calculated using statistical software. After obtaining the median split scores from the religiosity and financial knowledge variables, respondents are categorized as high religiosity (higher than median split) with number 1 and
low religiosity (lower than median split) with number 2. Besides, in the financial knowledge variable, the respondents are included in the perception group of high financial knowledge (higher than median split) with number 1 and low financial knowledge (lower than median split) with number 2.

From the 120 research respondents, there are 63 respondents who have high religiosity and 57 respondents who have low religiosity. Moreover, 60 respondents have high financial knowledge and 60 respondents have low financial knowledge.

Analysis of Research Results on Religiosity and Financial Knowledge Variables on Purchase Intention to Long-Term Investment in Sharia Insurance Using Cell Means (Hypothesis 4 Testing):

H4a: for low financial knowledge group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group;

H4b: for low religiosity group, high financial knowledge group has higher purchase intention to long-term investment in sharia insurance compared to low financial knowledge group;

H4c: for high financial knowledge group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group.

![Figure 3 – Research Hypotheses H4a, H4b, and H4c](image)

The basic of decision making:
1. If the Sig. value < 0.05, H1 is accepted;
2. If the Sig. value > 0.05, H1 is rejected.

In this research, to test hypotheses 4, design A(AB) is applied. Thus, in general, the regression equation for this test is as follows:

\[ Y_{ijk} = \mu + \text{RELi} + (\text{RELFOij})_{ij} + \varepsilon \]

Prerequisite: \( \Sigma_i \text{RELI} + 0\) & \( \Sigma_j (\text{RELFOij})_{ij} = 0 \), for all i

Where: \( Y_{ijk} \) = Purchase intention to long-term investment in sharia insurance; \( \mu \) = Constanta; \( \text{RELi} \) = Religiosity; \( \text{RELFOij} \) = The interaction between religiosity and financial knowledge; \( \varepsilon \) = Error.

Table 10 – The Result of \( \beta_1 \), \( \beta_2 \) and \( \beta_3 \)

| B | Description |
|---|-------------|
| \( \beta_1 \) | For low financial orientation group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group. The intercept calculation table shows that there is a difference between \( [FK=2] \text{REL}=1 \) and \( [FK=2] \text{REL}=2 \) on purchase intention to long-term investment in sharia insurance that results \( \beta_1 \). The significant level of \( \beta_1 \) is 0.000>0.05 so that \( \beta_1 \) is not significant. |
| \( \beta_2 \) | For low religiosity group, high financial knowledge group has higher purchase intention to long-term investment in sharia insurance compared to low financial knowledge group. The intercept calculation table shows that there is a difference between \( \text{REL}=2 \) \( [FK=1] \) and \( \text{REL}=2 \) \( [FK=2] \) on purchase intention to long-term investment in sharia insurance that results \( \beta_2 \). The significant level of \( \beta_2 \) is 0.333>0.05 so that \( \beta_2 \) is not significant. |
| \( \beta_3 \) | For high financial knowledge group, high religiosity group has higher purchase intention to long-term investment in sharia insurance compared to low religiosity group. The intercept calculation table shows that there is a difference between \( \text{REL}=1 \) \( [FK=1] \) and \( \text{REL}=2 \) \( [FK=2] \) on purchase intention to long-term investment in sharia insurance that results \( \beta_3 \). The significant level of \( \beta_3 \) is 0.355>0.05 so that \( \beta_2 \) is not significant. |

Source: test results on data analysis tools.
DISCUSSION OF RESULTS

**Higher Religiosity Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance.** Based on the testing results of hypothesis 1, it is found that the results of the analysis supported the hypothesis H1; i.e. with the Sig. value 0.000<0.05 where higher religiosity will increase purchase intention to long-term investment in sharia insurance. The research findings are in line with the findings of previous research conducted by Newas et al (2016) who stated that religiosity is significantly related to Muslim customers’ views on Islamic law and their attitude towards sharia financial products; however, it does not support purchase intention to sharia insurance. Previous research found that customers are more concerned with high profits and low service costs offered by conventional funds (Zaher and Kabir Hassan, 2001). Nurlette et al.'s findings (2018) have also strengthened our findings in which religiosity has significantly supported opening gold savings. These research findings identify that religiosity significantly affects individuals directly or through moderation variable on purchase to long-term investment in sharia insurance.

For Low Prevention Focus Group, High Religiosity Group Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance Compared to Low Religiosity Group. The test results on the hypothesis H2a found that the analysis results support the hypothesis; with the Sig. value 0.000<0.05. The interpretation of the results of this hypothesis is that an individual with low level of self-regulation, prevention focus and security will still have the intention or purchase intention to long-term investment in sharia insurance if the individual has a high level of religiosity. The results are in accordance with the research conducted by Hawlett et al (2008) that self-regulation has a significant effect on the possibility of contributing to pension funds. This is also in line with the findings of a research conducted by Manurung et al (2017) which in the SRF Prevention group, respondents who have high literacy have high investment intention compared to those who have low literacy. It has been proven to support the hypothesis with the β1 value = -0.228 and the Sig. value = 0.04 (<0.05) that has met the data significance criteria.

For Low Religiosity Group, High Prevention Focus Group Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance Compared to Low Religiosity Group. The test results on the H2b hypothesis found that the analysis results do not support the hypothesis; with the Sig. value 0.475<0.05. Husin and Rahman (2015) examined the effect of religiosity on individual behavior to participate in the family *takaful* with insignificant results. However, our findings are no in line with the research conducted by Manurung et al., (2017) that respondents with low financial literacy and SRF prevention have a higher investment intention than respondents who have SRF promotion with β2 = -0.263 and Sig. value = 0.02 (<0.05) that meets the data significance criteria.

For High Prevention Focus Group, High Religiosity Group Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance Compared to Low Religiosity Group. The test results on the H2c hypothesis found that the analysis results do not support the hypothesis; with the Sig. value 0.430>0.05. Our research findings are not in accordance with the findings of a research conducted by Manurung et al (2017) that respondents who have high financial literacy and SRF prevention tend to have a greater investment intention than SRF Promotion; with β3 = -0.233 and the Sig. value = 0.021 (<0.05) that meets the data significance criteria.

For Low Future Orientation Group, High Religiosity Group Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance Compared to Low Religiosity Group. The test results on the H3a hypothesis found that the analysis results support the hypothesis with the Sig. value 0.006<0.05. The findings on H3a are also in line with previous research that showed correlation between future orientation and dependent variables (Newaz et al, 2008). In addition, Newaz’s research also reported that customers with high level of CFC or Consideration Future Consequences are more likely to participate in retirement plans. Jacobs-Lawson and Hershey (2005) have examined the role of future time perspective towards saving behavior with the result that future time perspective significantly supports retirement saving. Based on these findings, we can see that future orientation has a very
important role in purchase intention to long-term investment in sharia insurance; moreover, this variable has moderated the religiosity variable. It is very interesting to investigate further because high future orientation and low future orientation has been proven to significantly affect purchase intention to long-term investment in sharia insurance as stated in the hypotheses H3a, H3b, and H3c.

For Low Religiosity Group, High Future Orientation Group Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance Compared to Low Religiosity Group. With the Sig. value 0.012 < 0.05, the findings in H3b are also in line with previous research that showed a correlation between future orientation and dependent variables (Newaz et al, 2008). In addition, their research reported that consumers with high levels of CFC or Consideration Future Consequences will be more likely to participate in retirement plans. Jacobs-Lawson and Hershey (2005) have examined the role of future time perspective towards saving behavior with the result that future time perspective significantly supports retirement saving.

For High Future Orientation Group, High Religiosity Group Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance Compared to Low Religiosity Group. With the Sig. value 0.027 < 0.05, the findings in H3b are also in line with previous research that showed a correlation between future orientation and dependent variables (Newaz et al, 2008). In addition, their research reported that consumers with high levels of CFC or Consideration Future Consequences will be more likely to participate in retirement plans. Jacobs-Lawson and Hershey (2005) have examined the role of future time perspective towards saving behavior with the result that future time perspective significantly supports retirement saving.

For Low Financial Knowledge Group, High Religiosity Group Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance Compared to Low Religiosity Group. The test results in the hypothesis H4a found that the analysis results support the hypothesis with the Sig. value 0.000<0.05. This finding shows that financial knowledge variables have an important role in purchase intention to long-term investment in sharia insurance when moderated by religiosity variable. In addition, this finding is also consistent with the findings of Newaz et al (2008) which support the importance of healthy finance for a better life in the future. Our findings have supported the need for financial knowledge in making decisions. This finding is also supported by Jacobs-Lawson and Hershey (2005) that financial knowledge combined with future time perspective and saving behavior, with the results of the degree of financial knowledge, significantly supports retirement saving. Similarly, with a high degree of future time perspective that has significantly affected risk tolerance. In age subsamples, subjective or objective financial knowledge in older age groups—related to long-term and short-term financial behavior—is stronger than subjective or objective financial knowledge in the younger age group. In the older age group, objective financial knowledge is more closely related to long-term financial behavior than one of the two other measures of financial literacy.

For Low Religiosity Group, High Financial Knowledge Group Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance Compared to Low Financial Knowledge Group. The test results on the H4b hypothesis have not supported the hypothesis with the Sig. value 0.333>0.05. The interpretation of the results of the hypothesis is that religiosity still has a very important role in purchase intention to sharia insurance. Our interpretation to this finding is that customers who have high financial knowledge will tend to choose non-sharia insurance products. This finding is also almost the same as the findings from H2b that the H4b group is not a consumer that can be prioritized in marketing sharia products. Our findings have reinforced the need for financial knowledge in making decisions. This is contrary to the findings of Jacobs-Lawson and Hershey (2005) that the role of financial knowledge combined with future time perspective and saving behavior—with the results of the degree of financial knowledge—significantly supports retirement saving. Similarly, high future time perspective degree significantly affects risk tolerance.

For High Financial Knowledge Group, High Religiosity Group Has Higher Purchase Intention to Long-Term Investment in Sharia Insurance Compared to Low Religiosity Group.
The test results on the H4c hypothesis support the hypothesis with the Sig. value 0.355>0.05. Our guess is that groups with high financial knowledge and high religiosity will tend to increase purchase intention. However, this is just beyond our expectations. This is contrary to the findings of Jacobs-Lawson and Hershey (2005) that the role of financial knowledge combined with future time perspective and saving behavior—with the results of the degree of financial knowledge—significantly supports retirement saving. Similarly, a high degree of future time perspective significantly affects risk tolerance.

CONCLUSION

Our research has examined the effect of religiosity on the purchase intention to long-term insurance investments that are moderated by self-regulation, future orientation and financial knowledge. This research applies a non-hierarchical method or cell means method using between subjects 2x2 and applies the Univariate General Linear Model (GLM) procedure. Our first research finding is that religiosity (REL) has significantly affected the purchase intention to long-term investment in sharia insurance (INTENTION). Thus, H1 is proven to support the hypothesis. The second conclusion is that religiosity which is moderated by the prevention focus is proven to increase the purchase intention to long-term investment in sharia insurance or H2a has been proven to support the hypothesis. However, religiosity which is moderated by a high prevention focus has not supported the hypothesis. So, H2b and H2c do not support the hypothesis.

The third conclusion is that religiosity which is moderated by the future orientation has shown very significant results. Thus, the hypotheses H3a, H3b, and H3c have been proven to support the hypothesis. This finding is very important for insurance business actors and the government since awareness of the importance of preparing for the future has begun among undergraduate students. Therefore, it can be concluded that future orientation is very effective in affecting the purchase intention to long-term investment in sharia insurance. This is what must be immediately followed up and made a top priority in designing marketing strategies. The final conclusion is that religiosity which is moderated by financial knowledge generally has been proven to affect the purchase intention to long-term investment in sharia insurance so that H4a has supported the research hypothesis. However, religiosity which is moderated by high financial knowledge has not supported the hypothesis; so, H4b and H4c are not proven. The thing that needs to be followed up is the need for a religious approach so that this sharia insurance product can be marketed more optimally.

LIMITATION OF THE RESEARCH

The limitations of this research have several weaknesses. The first limitation is that this research only takes samples of undergraduate students of Esa Unggul Citra Raya University for all majors while the population at Esa Unggul Citra Raya University is undergraduate and graduate students. The second limitation is that the sample is limited to one university. Finally, the third limitation is that the religiosity variable only measures Muslim respondents.

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SOCIO-ECONOMIC CHARACTERISTICS OF FISHERIES COMMUNITIES AND ENVIRONMENTALLY FRIENDLY FISHING EQUIPMENT IN BATANG DISTRICT, INDONESIA

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ABSTRACT
Capture fisheries development programs in an effort to improve welfare must reflect the effort to preserve their resources. The purpose of this study is to study the characteristics of fishing communities and environmentally friendly fishing equipment in Batang District. This study was conducted for 6 months started in April of 2018. The benefits of this study are as one of the efforts to assist the Government in developing environmentally friendly capture fisheries. This was descriptive analysis research with a case study conducted to the fishing community in Batang district. The analysis used to assess the socio-economic characteristics is a descriptive analysis. The analysis of environmentally friendly fishing equipment, a qualitative analysis was used by scoring based on 9 CCRF criteria. The results of social-economic characteristics of fishing communities indicate that there are socio-economic stratification, patron-client relations, dependence on natural and seasonal resources, hard workers, strong customs and beliefs, but many are low educated. The results of the assessment of environmentally friendly fishing equipment indicate that the most environmentally friendly fishing equipment is bubu with a score of 3.58. Gill net and trammel net are classified as environmentally friendly fishing equipment with a score of 3.23 and 3.12 respectively. Moreover, Arad is environmentally friendly fishing equipment with a score of 1.97 because the operation of arad will damage the bottom of the water and the catch is not selective. Recommendations can be given are the need for counseling on the importance of using environmentally friendly fishing equipment and the government needs to provide direction and assistance to arad fishermen to switch to environmentally friendly fishing equipment.

KEY WORDS
Socio-economic, bubu lipat, gill net, trammel net, arad.

Batang District is located on the northern coast of Central Java Province, it has 5 sub-districts becoming the centers for capture fisheries. There are 4 regions that have representative TPI (Fish Auction Place) namely TPI Klidang Lor in Batang District, TPI West Roban in Tulis Subdistrict, TPI Roban Timur in Subah District, and TPI Celong in Banyuputih District (Nur Hidayah et al., 2018). The number of fishing fleets in Fish Landing Base (PPI) Klidang Lor was 429, West Roban was 160, East Roban was 158, and Celong was 98. (Batang Marine and Fisheries Service, 2018). Fishing equipment is the most important equipment that must be prepared in fishing operations. The types of fishing equipment observed include small bottom trawls, trammel net, gill net and bubu (barrel-like trap). The operation of jaring arad (mini bottomtrawl) and bubu does not require ABK (ship crews) because it can be carried out by fishermen alone, while the operation of gill net and trammel net generally need ABK’s assistance (Brandt, 1972; Faik et al., 2018).

Fleet and fishing equipment as the main means of capture fisheries is regulated in such a way that they do not have a negative impact on fisheries resource users and the aquatic environment as well as other users of water services. The use of fishing equipment must pay attention to the balance and minimize negative impacts on other biotas. This is important to consider recalling the loss of biota in the ecosystem structure will affect the overall ecosystem. Errors in anticipating the dynamics of fishing equipment have also caused the
extinction of fish resources, therefore the use of fisheries resources needs to be done optimally and wisely (Radarwati, 2010).

Non-Environmentally Friendly Fishing (PITRAL) is a fishing activity that tends to be explorative and does not pay attention to conservation rules. Capture fisheries development programs, in an effort to improve welfare, must reflect efforts to preserve their resources (FAO, 1995). This research is important to be carried out to support the development of responsible capture fisheries. Thus, it can guarantee the preservation and sustainability of fish resources. The aim is to determine the characteristics of fishing communities and the status of fishing equipment based on the category of responsible fishing. The research was conducted in Batang District for 6 months started in May 2018.

MATERIALS AND METHODS OF RESEARCH

The method used in this study is a case study with the object of study collected from 4 TPIs in Batang District. Before carrying out the research, the steps of the research approach were first established. The step of this research approach is determined as a reference or guideline in the implementation in the field so that the data taken is in accordance with the research objectives.

The study of socio-cultural characteristics uses qualitative research methods. The qualitative approach aims to reveal symptoms in a holistic contextual (comprehensive and contextual) through collecting data from key person (respondent). After the data is collected, it was then compiled, analyzed and concluded and finally presented in the form of a research report. With this qualitative approach, it is expected to know, understand, explain and be able to describe the socio-economic characteristics of fishing communities.

The sampling method uses a quota sample of a fisherman using bubu, gill net, trammel net and arad, each of them is 15 persons, including respondents from the fish landing base, so the total was 45 respondents. Primary data obtained from research results are then processed while secondary data is used to support primary data. Secondary data was obtained from Batang and Syahbandar Marine and Fisheries Service.

Analysis of socio-cultural characteristics uses descriptive methods, while the analysis of environmentally friendly fishing equipment uses multi-criteria analysis. The researcher used the criteria for responsible fishing equipment. Fishing equipment units are analyzed based on the category aspects of responsible for 9 criteria. The criteria for responsible fishing equipment are divided into 9 criteria, and each criterion is divided into several sub-criteria (Brandt, 1972; FAO, 1995) as follows:

Table 1 – Environmentally Friendly Fishing Equipment Criteria

| No | Criteria                  | Sub-criteria                                                                 | Score |
|----|---------------------------|------------------------------------------------------------------------------|-------|
| 1  | Having high selectivity   | Fishing equipment to catch more than three species with different size variations. | 1     |
|    |                           | Fishing equipment to catch three species with different size variations.       | 2     |
|    |                           | Fishing equipment to catch less than three species with different size variations. | 3     |
|    |                           | Fishing equipment to catch more than three species with different size variations. | 4     |
| 2  | Not damaging habitat     | Equipment causes damage to habitat in large areas.                            | 1     |
|    |                           | Equipment causes damage to habitat in a narrow area.                          | 2     |
|    |                           | Safe equipment for habitat (not damaging habitat).                           | 3     |
|    |                           | Fishing equipment causes damage to some habitat in a narrow area.            | 4     |
| 3  | Being safe to fishermen  | The use of fishing equipment can result in death for fishermen.              | 1     |
|    |                           | The use of fishing equipment can result in permanent defects in.             | 2     |
|    |                           | The use of fishing equipment can result in temporary health.                 | 3     |
|    |                           | The use of fishing equipment is safe for fishermen.                         | 4     |
| 4  | Producing good quality fish | Dead and rotten fish.                                                       | 1     |
|    |                           | Dead, fresh and physically disabled fish.                                    | 2     |
|    |                           | Fresh dead fish.                                                            | 3     |
|    |                           | Living fish.                                                                | 4     |
| 5  | The product is not harmful | Products have a high chance of causing death.                              | 1     |
|    |                           | Products have the opportunity to cause health problems for.                 | 2     |
|    |                           | Products have very little chance for consumer health problems.               | 3     |
|    |                           | Safe for consumers.                                                         | 4     |
Table 1 Continue

|   | Low by-catch | The minimum impact on biodiversity | Not catching protected species. | Being socially accepted |
|---|--------------|-----------------------------------|---------------------------------|------------------------|
| 6 | By-catch consists of several species not sold in the market. | The use of fishing equipment causes the death of all living things and destroys habitat. | Protected fish are often caught. | A tool is socially accepted by the community if: (1) Cheap investment, (2) economically profitable, (3) in accordance with local culture, (4) in accordance with existing regulations. Weighting criteria is determined by assessing the reality on the ground that: |
|   | By-catch consists of several species and there are species sold. | The use of fishing equipment causes the death of several and destroys habitat. | The protected fish is caught several times. | Fishing equipment fulfills one of the four criteria above. |
|   | By-catch less than three species and sold in the market. | The use of fishing equipment causes the death of several but does not damage habitat. | The protected fish has been caught. | Fishing equipment fulfills two of the four criteria above. |
|   | The by-catch is less than three types and is high on the market. | Safe for biodiversity | The protected fish has never been caught. | Fishing equipment fulfills three of the four criteria above. |
| 7 |  |  |  | The fishing equipment fulfills all the criteria above. |
| 8 |  |  |  |  |

Source: Food and Agriculture Organization, 1995.

After all the scores are obtained from the interview, then refresher points are carried out by dividing the total number of scores of respondents by the number of respondents. After the score or value has been obtained, then reference points are made which can be a reference point in determining the ranking. The score or maximum value here is 36 points, while the environmentally friendly fishing equipment category will be divided into 4 categories with the following range of values: 1 - ≤751.75 very environmentally unfriendly, >1.75 - ≤2.50 not environmentally friendly, >2.50-≤3.25 environmentally friendly, >3.25-≤4.00 is very environmentally friendly.

RESULTS AND DISCUSSION

The fishing communities in Batang District live and carry out socio-economic activities related to the resources of the coastal and marine areas in the five coastal areas of Batang District. Coastal communities have certain characteristics that are unique.

Socio-economically and culturally explained that coastal communities have characteristics that are interrelated with each other. As for these characteristics are as follows:

_The existence of social stratification._ The most prominent social stratification in fishing communities in Batang District is economically stratified and occupationally stratified. Based on the economic status and employment status of fishing communities in Batang, there are three strata groups, consisting of upper strata, namely those who have motorized boats completed with fishing equipment. They are usually known as big (rich) fishermen. Usually they don't go to sea. The fishing operation was handed over to someone else. Rich fishermen frequently also act as collectors. However, there are usually collectors who are not fishermen, so these traders are a separate class. The second strata is those who have boats with outboard motors. In this middle strata, the owner usually goes to sea and leads fishing activities. The participating laborers may exist but are limited and often are family members only. The last strata are the lower strata or fisherman laborers. These laborers include fishermen who do not have fishing facilities, they only work as ABK.

_There is a Patron and Client Relationship._ The fishing community has a distinctive characteristic in terms of social structure, namely the strong relationship between patrons and fisheries business clients. Patrons usually provide assistance in the form of capital to clients. This is a tactic for patrons to bind clients to their debts so that the business keeps going on.
Depending on Natural Conditions and the Environment. The conditions of marine natural resources and environmental problems have implications for the socio-economic conditions of coastal communities, especially fishing communities. Environmental damage, especially pollution, because of industrial and domestic wastes can shake the joints of socio-economic life of coastal communities. For this reason, fisheries development not neglecting the aspects of environmental sustainability are required (Hendriyati et al., 2005).

Dependence on the Market. Dependence on market conditions is caused by the results of their capture that must be sold first before the proceeds of the sale are used to meet the necessities of life. These characteristics have implications for price changes (Farkhan et al., 2018). Changes in the price of fishery products greatly influence the socio-economic conditions of the community.

Having Strong Culture and beliefs. Judging from the aspect of beliefs, the fishing community in Batang District still considers that the sea has the magical power so they still often do sea alms custom. The meaning of the sea alms tradition is a form of offering to the rulers of the sea, which has the meaning to avoid the calamity that occurs when going to sea and as a manifestation of gratitude for the results of the sea. The tradition of sea alms or Nyadran is an annual ritual activity as a form of gratitude for God's blessings for one year. The hope of the fishermen community is to carry out the tradition of sea alms to be able to go fishing safely, comfortably and get abundant sustenance. The cultural tradition of Nyadran which buffers buffalo heads has become an annual agenda and destination for fishing communities in Klidang Lor Village, Batang District. The buffalo head is symbolic because in Javanese “kebo” (buffalo) means ignorance, so we discard ignorant behavior from past to think forward to the challenges ahead.

Hard Worker. Another characteristic of Batang fishing community is the activity of women and children working to earn a living. Women often work as fish traders (retailers), both retailers of fresh fish and processed fish. They also process the fish, both small-scale processing at home to sell themselves or as laborers in fish processing entrepreneurs or other catches. Meanwhile, boys are also involved in fishing activities.

Low Education and Knowledge. Viewed from the education aspect of the fishing community in Batang, most (71%) are elementary school (SD) graduate, perhaps because the existing education facilities are still very limited. Judged from the knowledge aspect, Batang fishermen's community gets knowledge from their ancestral heritage, it is still rare for them to get knowledge from fishing business training, training on how to use environmentally friendly fishing equipment and by participating in an internship at a large ship.

The results showed that the active fishing equipment in the study area was bubu, gill net, trammel net, and arad. All those fishing equipment are still actively operated by fishermen in Batang district (Faik et al., 2018; Farkhan et al., 2018). The results of the assessment of environmentally friendly fishing equipment indicate that fishing equipment which is very environmentally friendly is a bubu with a score of 3.58. Gill net and trammel net are classified as environmentally friendly fishing equipment with a score of 3.23 and 3.12. While arad is an environmentally friendly fishing equipment (score 1.97).

![Figure 1 – Graph of the Value of Eco-Friendly Fishing Equipment in Batang District](image-url)
According to Sudirman and Mallawa (2004), bubu lipat (folding) is classified as environmentally friendly by fulfilling the criteria of having a high selectivity which is catching fish of one species with a relatively same i.e. crab, safe for fishermen, product yield is relatively safe for consumers and does not harm protected fish. Bubu fulfills several criteria for environmentally friendly fishing equipment based on CCRF with the score obtained is 3.58. This is because bubu lipat meets the criteria for environmentally friendly fishing equipment. Bubu is fishing equipment that has a high selectivity with a score of 3 which indicates that the fishing equipment is less than three species with almost similar size. The catches of bubu lipat are Rajungan (*Potrunus Pelagicus*), Sembilang Fish (*Plotusus Canius*), Sebelah Fish (*Issetodes Irumiei*). Bubu lipat is fishing equipment that does not damage habitat with a score of 4. This is because bubu lipat is operated in muddy or sandy waters, so they are less likely to damage habitat. Bubu lipat, during its operation, does not endanger fishermen, with a score of 4. The operation of bubu lipat by placing fishing equipment into the waters is done by 2 fishermen. Bubu is operated using a longline system in which the bubu is installed in large quantities and arranged using a rope between one bubu and another. Bubu usually installed with the longline system are associated with snap between the branch straps and the main rope. It is then marked with a floating mark on both ends and equipped with ballast so that the bubu does not move, bubu is installed in the morning, then left, and taken in the afternoon. This eases fishermen to operate bubu so that it is safe and does not endanger fishermen.

The quality of the catches is good with an average score of 4. The catch of living crab when trapped in the bubu lipat, the high living catch is because the bubu body is made of polyethylene which does not result in the catch being injured and is considered a shelter by the target catch. In addition, the principle of bubu operation trapping the catch does not cause physical defects in the catch that enters the trap. The catch of bubu lipat does not endanger consumers with a score of 4 because the main catch is alive.

By catch consists of three types and is sold in the market. Bubu lipat does not catch large numbers of species so it is safe for biodiversity. During the catch operation, the fisherman can get 30-45 kg of crab, but the side catch is only 1-2 kg. Bubu does not catch biota protected by law, because the construction of the mouthpiece is flat so that protected biota such as sea turtles are less likely to be caught. In addition, bubu lipat can be socially acceptable and does not conflict with local culture and the existing regulations.

Gill net is included in the environmentally friendly category with a score of 3.23. This is due to gill net meets several criteria for environmentally friendly fishing equipment based on CCRF. These criteria, among others, as fishing equipment, gill net catches more than three species with a size variation that is more or less the same as the catch selectivity score results by 1. Gill net can be said selective based on size and less selective by type because it does not only capture the target species. Gill net is said selective based on its size because the mesh size on this fishing equipment is the same for the entire body of the net and also, unlike trammel net which has an inner and outer that causes trammel net is less selective in terms of size.

Gill net fishing equipment is safe for habitats with a score of 4. This gill net is operated by decreasing the floating sign first, then the rope, and the body of the net. Gill net is operated passively at the bottom of the column of water with muddy habitat so that its use will not damage habitat. The operation of the gill net is safe for fishermen with a score of 4. The operation of Gill Net does not endanger fishermen. The small weight and size of the fishing equipment make the operation of the gill net easier than other fishing equipment such as arad, so there is no possibility to injure the fisherman.

According to Rusmilyansari (2012), the gill net catch is dominated by fresh dead fish. Gill net catches are dead fish and fresh fish with a score of 3. The principle of gill net trapping fish makes a small portion of the catch physically damaged in the gills, fins, and scales. Products/fish caught using gill net do not harm consumers and are safe with a score of 4. The products produced are considered not harmful to consumers because when the fish is sold it is still fresh and the quality is good, so the products produced are safe for consumers. According to Subehi et al., (2017), the by-catch using gill net is a fish that has high economic
value with not too many species. The by-catch using gill net consists of several species and there are species that are sold on the market with a score of 2. The by-products consist of Patin Fish (*Pangasianodon hypophthalmus*), Sembilang Fish (*Neosilurus* sp), Talang Fish (*Chorinemus talia*), Rajungan (*Portunus pelagicus*), and Crab (*Scylla* sp).

The operation of gill net is safe for biodiversity or does not cause death for some species and does not damage the habitat with a score of 4. Gill net fishing equipment is operated passively so that it is unlikely that this fishing equipment will damage habitat and ecosystems. According to Subehi et al., (2017) during the operation of gill net, fish caught are not from groups of fish or protected biota such as turtles and sharks. Gill net is operated in shallow waters, so protected species such as turtles and sharks have never been caught by this fishing gear. Gill net never catches fish protected by law with a score of 4. Gill net criteria are socially accepted with a score of 3. According to fishermen, a gill net is advantageous because this fishing equipment produces catches with good quality and high selling prices.

The results of interviews with respondents using trammel net including in the environmentally friendly category with a score of 3.12. This is because the trammel net meets several criteria for environmentally friendly fishing equipment based on CCRF. Based on the selectivity criteria, trammel net captures more than three species with different size variations with a score of 1. The main target of the trammel net is shrimp. Trammel net is considered not selective because it captures more than three species with different size variations in one catch. The bag on the trammel net is in the inner net with a size of the net mesh by 1.5-inch, so that fish of all sizes can be caught in this section.

Trammel net seen from the indicator of damaging habitat or not does show a score of 4. Trammel net is operated by lowering the weight, the body of the net and the float then immersing in the bottom of the water for 30-60 minutes. Respondents claimed to operate trammel net passively in the bottom of the water so that the trammel net does not harm the coral reefs and other basic water environments. The use of trammel net is safe for fishermen with a score of 4. The safety of fishermen in the fishing process must be considered so will not happen things that are not desirable, so that the fishermen must master the procedures for using each fishing equipment, thus there are no difficulties and even accidents at sea. Based on the interviews with fishermen, trammel net is not dangerous and does not injure fishermen.

Catches from using trammel net are dead fish and fresh fish with a score of 3. Fishermen claim that the white shrimp caught by trammel net is carefully removed from the net because it can affect the selling price. Whereas the bycatch i.e. fish with physical defects such as the injury to the operculum, scales, and fins due to being entangled by a layered net. Fish caught by trammel net is safe to consume with a score of 4. Fish products resulted from trammel net are considered safe for consumption because the fish is sold in a fresh and good condition. The by-catch using trammel net consists of several species and there are species which are sold on the market with a score of 2. The by-product of the trammel net consists of several species, namely Dogil Shrimp (*Metapenaeus ensis*), Tigawaja (*Otolithes ruber*), Petek (*Leioghnatus equillus*), Patin (*Pangasianodon hypophthalmus*), Lundu (*Mystus nigriceps*), White Snapper (*Lates* sp), Rajungan (*Portunus pelagicus*), and Crab (*Scylla* sp).

The use of trammel net is safe for biodiversity with a score of 4. The operation of trammel net conducted passively has very little chance of damaging habitat and killing other species. Based on the results of interviews with trammel net fishermen, most of them stated that the trammel net once caught protected fish with a score of 3. Fish caught are not sharks or turtles, but crabs that are still not suitable for capture with <10 cm carapace width. Based on the Regulation of Minister of Maritime Affairs and Fisheries No. 1 of 2015, Rajungan (*Portunus pelagicus*) catching may be carried out if the carapace width is more than 10 cm. Trammel net fulfills three of the four criteria, socially accepted with a score of 3, which is economically profitable, in accordance with local culture, and in accordance with existing regulations.

Arad has a score of 1.97 which shows the criteria for fishing equipment not environmentally friendly. Arad is fishing equipment that is categorized as destructive because
the impact of arad can damage the environment and biological resources. Arad criteria for environmentally friendly are seen from the criteria of fishing equipment selectivity. Arad is fishing equipment having a low selectivity with an average score of 1, which is to capture more than three species of different sizes. Having been seen from damaging or not the habitat, arad can destroy coral reefs at the bottom of the waters and spawning locations. Arad sweeps the bottom of the waters so that it becomes muddy and can pollute the waters and small corals are damaged. the operation of arad does not endanger fishermen because using fishing aids, with a score of 3. From the criteria, Arad catches have a poor quality with a score of 2 which indicates that the catch is in a fresh dead state and physically disabled. The products resulted do not endanger consumers. Although the catch is mixed with mud, it is easy to clean and safe for consumers' health with an average score of 4.

Judged from the by-catch, Arad scores are 1. Arad is not selective and will cause wasted catches to increase because most of the non-target fish caught are then thrown away again in the dead state. Arad's catches are Kuniran Fish (Upenesus Moluccensis), Anchovy (Stolephours Sp), Tigwojo Fish, Squid (Loligo Pealli), Cuttlefish (Sepia Oficinalis) Jerbung Shrimp (Paneus Merguensis), Dogol Shrimp (Peneaus Monodon), Pufferfish (Tetraodontidae), Tripang (Holothurioidea), Petek Fish (Lelognathus Sp), Crab (Scylla Seirata), Mackerel (Restelliger), White Bawal (Stromateus Cinereus), Lidah Lidah Fish (Cynoglossus Sp), Barracuda (Sphyraena Sp) and Sea Snakes (Hydrophiinae). Arad catches not sold are discarded, such as pufferfish (tetraodontidae), sea snakes (hydrophiinae), jellyfish and tripang.

Having been judged from the impact on biodiversity, Arad's score is 2. Arad is fishing equipment that catches fish in the waters. The operation of arad sweeping the bottom of the waters with a running vessel carried out for 1-2 hours results in small corals being washed away, causing damage to biological resources and even death to some flora and fauna in the waters. Viewed from the aspect of protected fish capture, Arad once received turtles and sharks but returned to the waters. Because fishermen already know that turtles are prohibited and have myths when carrying turtles home will get calamity or bring bad luck, so they are given an average score of 2.

Judged from socially accepted or not, the average score is 2. Arad is fishing equipment whose price is relatively cheap compared to gill net and trammel net and according to fishermen, it is very profitable because the results are more than those of bubu and gill net. Moreover, Arad can be operated throughout the year, regardless of the season. However, arad is one of the fishing equipment which is prohibited by the government in the Minister of Maritime Affairs and Fisheries Regulation No.71/PERMEN-KP/2016 concerning the Fishing Line and the Placement of Fishing Equipment in the Fisheries Management Areas of the Republic of Indonesia. Arad is fishing equipment that is prohibited from being operated on all fishing routes (Sulistyowati, 2017).

CONCLUSION

The research results on the socio-economic characteristics of fishing communities in Batang District showed that there were socio-economic stratification, patron-client relations, dependence on natural and seasonal resources, hard workers, strong customs and beliefs, but many were low educated. There are 4 (four) types of fishing equipment in Batang District namely Bubu, Trammel net, Gill net and Small Bottom Trawl (Arad). The fishing equipment which is classified as very environmentally friendly is the bubu with a score of 3.58. Whereas Gill net and Trammel net are environmentally friendly with scores of 3.23 and 3.12 respectively. Arad is included in non-environmentally friendly fishing equipment with a score of 1.97.

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THE EFFECT OF SOCIAL, PERSONAL AND PSYCHOLOGICAL FACTORS OF STUDENTS ON THE PURCHASING DECISION OF ISLAMIC AND CONVENTIONAL BANK PRODUCTS: A CASE STUDY ON THE ISLAMIC UNIVERSITIES IN PALEMBANG

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ABSTRACT
This research focuses on the problem whether there any differences in the average between social, personal and psychological factors on the decisions of students of Universitas Islam Negeri (UIN) Palembang and Universitas Muhammadiyah Palembang in purchasing Islamic bank products or conventional banks. The model used for this study is comparative analysis of two free samples (Independent Sample T Test), the data is processed and tested using the SPSS Version 19. The results show that the value of t count on social factors is -2.304 and the significance value for social factors is 0.023, it can be concluded that there are differences in social factors between students of UIN Palembang and Universitas MuhammadiyahPalembang in making purchasing decisions for Islamic bank products or conventional banks. The value of t count on personal factors is -2.912 and the significance value for personal factors is 0.004, it can be concluded that there are personal factor differences between students of UIN Palembang and Universitas MuhammadiyahPalembang in making purchasing decisions for Islamic bank products or conventional banks. The value of t count on psychological factors is -3.187 and the significance value for psychological factors is 0.002, it can be concluded that there are psychological factors differences between students of UIN Palembang and Universitas MuhammadiyahPalembang in making purchasing decisions for Islamic bank products or conventional banks. The value of t count for the purchasing decision factor is -4.538 and the significance value for the purchasing decision factor is 0.000, it can be concluded that there are differences in purchasing decision factors between students of UIN Palembang and Universitas MuhammadiyahPalembang in making purchasing decisions for Islamic bank products or conventional banks.

KEY WORDS
Social, personal, psychological, purchasing decision, Islamic bank, conventional bank.

Consumer behavior is a process carried out by someone or an organization in finding, buying, using, evaluating and and other actions in order to meet their needs. Consumer behavior before consuming a product / service will go through several stages, namely the stage before purchase, purchase, and after purchase. According to The American Marketing Association as cittedin Setiadi (2015: 2), consumer behavior is "a dynamic interaction between affection and cognition, behavior and environment where people carry out exchange activities in their lives". Schiffman and Kanuk in Sumanwan, et al., (2012: 186), define consumer behavior as "consumer behavior as an action directly involved in obtaining, consuming and consuming products or services, including the process of decisions that precede and follow this action".

Based on the opinions of some experts such as Schiffman and Kanuk, Kotler and others study about the factors that influence consumer behavior. According to them, broadly there are two factors that influence consumer behavior, namely internal factors and external factors. Internal factors consist of: (a) Learning and memory experience (learning and memory); (b) Personality and self-concept (personality and self-concept); (c) Motivation and involvement (motivation and involvement); (d) Attitude (attitude); (e) Perception. External
factors consist of: (a) Cultural factors; (b) Social factors; (c) Economic factors; (d) Marketing mix factors.

In addition to internal and external factors, there are two more factors that usually affect consumer behavior, namely 1. Socio-cultural factors with the following indicators: (a) cultural factors; (b) Social class factors; (c) role model factors; (d) Family factors. 2. Psychological factors with the indicators of: (a) learning experience factors; (b) personality factors; (c) attitude and belief factors; and (d) self-concept or self-concept.

In 2008 a new trend emerged for the formation of Islamic banks through the mechanism of acquisition and conversion from conventional banks. This trend emerged after the enactment of Law number 21 of 2008 concerning Islamic banking. The establishment of Islamic banks in Indonesia certainly requires research concerning consumer behavior in addressing this trend because based on the facts in the field, one of the obstacles faced by Islamic banking is the lack of socialization to the public about the existence of Islamic banks. Socialization is not only about introducing the existence of Islamic banks somewhere, but also introducing mechanisms, Islamic bank products and Islamic bank financial instrument instruments to the public.

Most people already know about the existence of Islamic banks, but they still experience the lack of information on products offered by Islamic banks and the assumption that the supporting facilities provided by Islamic banks are still inferior to the facilities offered by conventional banks. Theories about internal and external factors of consumer behavior which consist of social, personal and psychological factors can be used to provide understanding and knowledge to the public about Islamic banks and can also be used to influence people's views about Islamic banks themselves.

According to Antonio as cited in Hidayati (2017: 32), sharia bank is "an operational bank and its products are developed based on the principles of Islamic syariah namely Al-Qur'an and Al-Hadist". Sharia banks are banks that run their operations in accordance with the Islamic sharia provisions, especially in relation to Islamic modalities. The practices of doing things away from practices that are concerned with the elements of usury.

Based on Law No. 10 of 1998 Article 1 paragraph 13, sharia principles are rules of agreement based on Islamic law between banks and other parties for depositing funds and or financing business activities, or other activities declared in accordance with sharia, including financing based on the profit sharing principle (mudharabah), financing based on the principle of equity participation (musyarakah), the principle of buying and selling goods by obtaining profits (murabahah), or financing capital goods based on the principle of pure rent without choice (ijarah) (Hidayati, 2017: 32). Hidayati (2017: 30) mentions that to see the development of banking in Indonesia, there are currently 2,652 banks built (outside BRI and BRI’s Village Unit). According to the American standard, it is derived from the population of Indonesia, so this country still needs 7,800 banks. The banking sector plays a significant role in the Indonesian economy.

![Aset Bank Syariah (2014-Nov 2017)](image)

Figure 1 – Assets of Islamic Bank in 2017 (Source: OJK, Financial Services Authority, 2017)
Islamic banking in Indonesia has experienced growth in terms of institutions. According to the Financial Services Authority report, up to July 2016 there were 12 Sharia Commercial Banks (BUS), 22 Sharia Business Units (UUS), and 103 Sharia People's Financing Banks (BPRS) spread throughout almost all regions of Indonesia. Based on data from the Indonesian Banking Statistics of the Financial Services Authority, Islamic commercial bank assets up to the end of June 2017 has reached Rp 271.3 trillion, which means it grew 6.74 percent compared to December 2016. This figure is also increased 26 percent from the position in June 2016.

The Bank with the Biggest Asset in Indonesia is PT Bank Mandiri (Persero) Tbk and PT Bank Rakyat Indonesia (Persero) Tbk still leads the bank with the largest assets in the country. The two State-Owned Enterprises (BUMN) have assets in excess of Rp. 1,000 trillion. While PT Bank Central Asia Tbk, which is a private bank with the largest assets, is third. The plan to merge PT Bank Tabungan Pensiun National Tbk (BTPN) and PT Bank Sumitomo Mitsui Indonesia (BSMI) will make the bank categorized under 10 banks with the largest assets in the country. Based on published financial reports as of September 2017, BTPN’s assets amounted to Rp. 93.8 trillion and BSMI reached Rp. 68.7 trillion. So if the assets of the two banks are combined it will reach Rp 162.5 trillion. With such assets, the results of the merger of the two banks will shift the position of PT Bank Permata Tbk, which is currently in tenth place with assets of IDR 150.7 trillion.

![Figure 2 – The Asset of 10 Biggest Banks in Indonesia in 2017 (Source: OJK, Financial Services Authority, 2017)](image)

The State Islamic University (UIN) and Muhammadyah University are two Islamic Universities located in Palembang City. These two campuses certainly learn about the laws in Islam which regulate transactions using Islamic banks and conventional banks, especially laws governing bank interest. Reality in the field shows that not all students from this campus use Islamic banks as a place for them to conduct financial transactions, even some of the universities from these universities do not use them. The Muhammadiyah University of Palembang collaborated with the Bank of South Sumatra Babel in conducting its financial transactions; the UIN Palembang used Bank BRI, South Sumatra Babel and Bank Mandiri Syariah.

To find out and prove whether "there are differences in the average between social, personal and psychological factors on the decisions of students of the State Islamic University (UIN) Palembang and the Muhammadiyah University of Palembang in purchasing Islamic bank products or conventional banks" this study was prepared with the title of "The Influence of Social, Personal and Psychological Factors Students on Purchasing Decision of Islamic Banks or Conventional Banks (Case Study of Two Islamic Universities in the City of Palembang)".

**METHODS OF RESEARCH**

The problem examined in this study is based on the fact that consumer behavior, especially regarding social, personal and psychological factors play an important role for students in purchasing Islamic or conventional bank products. Based on the three factors
mentioned above, the problem can be formulated as follows: "Are there any differences in the average between social, personal and psychological factors on the decisions of students of Universitas Islam Negeri (UIN) Palembang and Universitas Muhammadyah Palembang in purchasing Islamic bank products or conventional banks".

This research will be conducted at two Islamic Universities in Palembang, namely: Universitas Islam Negeri (UIN) Palembang with the address Jl. Prof. K.H. Zainal Abidin Fikri KM. 3.5, Pahlawan, Kemuning, Palembang City, South Sumatra 30126 and Universitas Muhammadyah Palembang with the address Jl. General A. Yani, 13 Ulu, SeberangUlu II, Palembang City, South Sumatra 30116. The study population is students in two Islamic colleges that are active and registered in 2018 (see table 1).

Table 1 – Study Population

| No. | University                                      | Number of Students |
|-----|------------------------------------------------|--------------------|
| 1.  | Universitas Islam Negeri (UIN) Palembang       | 16.539             |
| 2.  | Universitas Muhammadyah Palembang              | 11.840             |
| Total|                                                | 28.379             |

Source: Research and Development of Ministry of Research, Technology and Higher Education (Diklititbang), 2018.

Not all populations of students can be sampled, therefore for this research to represent the population, Slovin formula is used (Umar, 2001), the total sample is 100 people. Because the number of sub-populations is not the same between each University, the determination of the number of samples for each sub-population uses Proportional Random Sampling procedures (Sanusi, 2003), by taking samples randomly with a proportional number for each department (see table 2).

Table 2 – Study Sample

| No. | University                                      | Number of Students | Calculation (Ni/Ni x n) | Sample (students) |
|-----|------------------------------------------------|--------------------|-------------------------|-------------------|
| 1.  | Universitas Islam Negeri (UIN) Palembang       | 16.539             | 16.539 \( \times \frac{100}{28.379} \) | 58.27 = 58        |
| 2.  | Universitas Muhammadyah Palembang              | 11.840             | 11.840 \( \times \frac{100}{28.379} \) | 41.7 = 42         |
| Total|                                                |                    |                         | 100               |

Source: Research and Development of Ministry of Research, Technology and Higher Education (Diklititbang), 2018.

The easurement of variable scores on question items in this study is using a Likert scale. Alternative assessments in measuring these items consist of 5 (five) alternative choices that have very low to very high levels (worth 1 dd. 5) that are applied vary according to the question. Thus measurements can be achieved which not only describe the categories or sequences that are inorginal scales but also themselves interval scale. The statistical analysis model used is using the Sample T Test (Independent Test method). Independent Sample T Test is a T sample test that is not related / free, indicating that there is no relationship between the two samples that will be tested.

Data analysis used in this study is by collecting data, which is then processed using quantitative analysis and qualitative analysis.

RESULTS AND DISCUSSION

Data obtained from questionnaires distributed to both university students were then inputted and processed through the SPSS program. In this section we will discuss the profile of respondents. To analyze the profile of respondents, frequency tables are used to see the composition of respondents' answers on each variable. Profile analysis of respondents regarding both universities is as follows:

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Table 3 – Descriptics Statistics

| n/n      | Age | Gender |
|----------|-----|--------|
| N        | 100 | 100    |
| Valid    |     |        |
| Mean     | 19.70 | 1.63  |
| Missing  | 0   | 0      |
| Std. Error of Mean | .116 | .049   |
| Median   | 20.00 | 2.00   |
| Mode     | 2   | 2      |
| Std. Deviation | 1.159 | .485  |
| Variance | 1.343 | .235   |
| Skewness | .254 | -0.547 |
| Kurtosis | 1.375 | -1.736 |
| Std. Error of Skewness | .241 | .241   |
| Std. Error of Kurtosis | .478 | .478   |
| Range    | 6   | 1      |
| Minimum  | 17  | 1      |
| Maximum  | 23  | 2      |
| Sum      | 1970 | 163    |

Table 4 – Frequency of Respondents Age

| n/n | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----|-----------|---------|---------------|--------------------|
| Valid | 17 | 4 | 4.0 | 4.0 | 4.0 |
|     | 18 | 8 | 8.0 | 8.0 | 12.0 |
|     | 19 | 26 | 26.0 | 26.0 | 38.0 |
|     | 20 | 47 | 47.0 | 47.0 | 85.0 |
|     | 21 | 9 | 9.0 | 9.0 | 94.0 |
|     | 22 | 3 | 3.0 | 3.0 | 97.0 |
|     | 23 | 3 | 3.0 | 3.0 | 100.0 |
| Total | 100 | 100.0 | 100.0 |

In table 4 above, it can be seen that the lowest age of respondents is 17 years old (4 people) and the highest age of respondents is 23 years old (3 people).

Table 5 – Gender

| n/n | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----|-----------|---------|---------------|--------------------|
| Valid | Male | 37 | 37.0 | 37.0 | 37.0 |
|     | Female | 63 | 63.0 | 63.0 | 100.0 |
| Total | 100 | 100.0 | 100.0 |

It can be seen that in Table 5, the number of respondents who are male are 37 people and female are 63 people.

The Independent Sample T Test is used to test the comparison of two independent sample group averages. This study examines whether there are differences in the value of social factors, personal factors, and psychological factors on purchasing decisions between students of UIN Palembang and Universitas Muhammadiyah Palembang. The following are the results of the calculation:

Table 6 – Group Statistics

| University | N | Mean | Std. Deviation | Std. Error Mean |
|------------|---|------|----------------|-----------------|
| Social Factor | 1 | 58 | 19.76 | 2.473 | .325 |
| Personal Factor | 1 | 58 | 23.71 | 3.008 | .464 |
| Psychological Factor | 1 | 58 | 15.52 | 2.326 | .305 |
| Purchasing Decision | 1 | 58 | 19.78 | 2.847 | .374 |

Universitas Islam Negeri (UIN) = 1, Universitas Muhammadiyah = 2.
Table 7 – Independent Samples Test

| Social Factor | Equal variances assumed | Equal variances not assumed | T | DF | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |
|---------------|-------------------------|----------------------------|---|----|----------------|-----------------|----------------------|----------------------------------------|
| F             | 1.382                   | .243                       | -2.304 | 98 | .023          | -1.265         | .549                 | -2.355, -1.176                        |
| Personal Factor | Equal variances assumed | Equal variances not assumed | -2.233 | 77.589 | .028 | -1.265 | .566 | -2.393, -1.137 |
| Psychological Factor | Equal variances assumed | Equal variances not assumed | -2.984 | 95.140 | .004 | -2.007 | .673 | -3.343, -1.672 |
| Purchasing Decision | Equal variances assumed | Equal variances not assumed | 4.187 | 97.471 | .000 | -2.296 | .476 | -3.239, -1.352 |

Table 7 explains the Levene’s (homogeneity test) and Independent Samples test results that are used to find out about differences in social, personal, psychological and purchasing decisions between the students of both universities. Leven's test is done to find out the type of data variant (same or different). If the same, then the t test Equal variances assumed will be used but if it is different, then equal variances not assumed will be used.

The Levene's test results can be seen in the F value and significance. In table 7 above, it is known that the F value for social factor variables is 1.382 with a significance of 0.243, because the significance is greater than 0.05, it can be concluded that the data variant for social factors is the same. The F value for personal factor variables is 2.037 with a significance of 0.157, because the significance is greater than 0.05, it can be concluded that the data variant for personal factors is the same. The value of F for psychological factor variables is 0.019 with a significance of 0.890, because the significance is greater than 0.05, it can be concluded that the data variant for psychological factors is the same. The value of F for the purchase decision variable is 4.187 with a significance of 0.043, because the significance is smaller than 0.05, it can be concluded that the data variant for the purchase decision variable is not the same (different).

For decision making on the Independent Samples T test, it is determined by looking at the t-value and the significance of equal assume. If the significance is less than 0.05 then the conclusion is there are differences in values between social factors, personal factors, psychological factors and purchasing decisions between the students of the two universities. Based on the hypothesis, Ho = there is no difference between the average value of students in UIN Palembang and Universitas Muhammadiyah Palembang on social factors, personal factors and psychological factors in purchasing decision of Islamic or conventional bank products. Furthermore, Ha = there is a difference between the average value of students in UIN Palembang and Universitas Muhammadiyah Palembang on social factors, personal factors and psychological factors in purchasing decision of Islamic or conventional bank products.
products. Test criteria are if \( t \leq \text{t count} \leq t \text{table} \), then \( H_o \) is accepted and if \( t \text{counts} < -t \text{table} \) or \( t \text{count} > t \text{table} \), then \( H_o \) is rejected.

From table 7 above it is known for social factors the value of \( t \leq \text{t count} \leq t \text{table} \) (-2.304 \(<-1.984\)), then \( H_o \) is rejected, so it can be concluded that "there is social factors difference between the average value of students in UIN Palembang and Universitas Muhammadiyah Palembang in purchasing decision of Islamic or conventional bank products. As for the significance, if the significance is \( > 0.05 \), then \( H_o \) is accepted, and if the significance is \( < 0.05 \), then \( H_o \) is rejected. The significance value for social factors is 0.023, then \( H_o \) is rejected. Therefore, it can be concluded that there is social factors difference between students in UIN Palembang and Universitas Muhammadiyah Palembang in purchasing decision of Islamic or conventional bank products.

For personal factors the value of \( t \leq \text{t count} \leq t \text{table} \) (-2.912 \(<-1.984\)), then \( H_o \) is rejected, so it can be concluded that there is personal factors difference between the average value of students in UIN Palembang and Universitas Muhammadiyah Palembang in purchasing decision of Islamic or conventional bank products. For the test results based on the significance value, for personal factors is 0.004, then \( H_o \) is rejected. Thus it can be concluded that there is a difference in the average between students of UIN Palembang and Universitas Muhammadiyah Palembang in making purchasing decisions for syariah bank products or conventional banks.

For pyschololofical factors, the value of \( -t \text{count} < t \text{table} \) (-3.187 \(<-1.984\)), therefore \( H_o \) is rejected and it can be concluded that there is psychological factors difference between the average value of students in UIN Palembang and Universitas Muhammadiyah Palembang in purchasing decision of Islamic or conventional bank products. For the test results based on the significance value, for personal factors is 0.002, then \( H_o \) is rejected. Thus it can be concluded that there is a difference in the average between students of UIN Palembang and Universitas Muhammadiyah Palembang in making purchasing decisions for syariah bank products or conventional banks.

For purchasing decision the value of \( -t \text{count} < t \text{table} \) (-4.538 \(<-1.984\)), thus \( H_o \) is rejected and it can be concluded that there is purchasing decision factors difference between the average value of students in UIN Palembang and Universitas Muhammadiyah Palembang in purchasing decision of Islamic or conventional bank products. For the test results based on the significance value, for personal factors is 0.000, then \( H_o \) is rejected. Thus it can be concluded that there is a difference in the average between students of UIN Palembang and Universitas Muhammadiyah Palembang in making purchasing decisions for syariah bank products or conventional banks.

Individual actions in making decisions to obtain, use, determine products and services are called consumer behavior. Broadly speaking there are two factors that influence consumer behavior, namely internal factors and external factors. In influencing consumer decisions to choose to save in Islamic banks or conventional banks, banks must pay attention to internal and external factors of consumer behavior. For Islamic banks, one of the obstacles faced by Islamic banking is the lack of socialization to the public about the existence of Islamic banks. Socialization is not only about introducing the existence of Islamic banks, but also introducing mechanisms, products and instruments to the public. Most people already know about the existence of Islamic banks, but they lack information about products offered by Islamic banks and the assumption that the supporting facilities provided by Islamic banks are still inferior to the facilities offered by conventional banks.

CONCLUSION AND SUGGESTIONS

The value of \( t \text{count} \) on social factors is -2.304 and the significance value for social factors is 0.023, it can be concluded that there are differences in social factors between
students of UIN Palembang and Universitas Muhammadiyah Palembang in making purchasing decisions for Islamic bank products or conventional banks. The value of t count on personal factors is -2.912 and the significance value for personal factors is 0.004, it can be concluded that there are personal factor differences between students of UIN Palembang and Universitas Muhammadiyah Palembang in making purchasing decisions for Islamic bank products or conventional banks. The value of t count on psychological factors is -3.187 and the significance value for psychological factors is 0.002, it can be concluded that there are psychological factors differences between students of UIN Palembang and Universitas Muhammadiyah Palembang in making purchasing decisions for Islamic bank products or conventional banks. The value of t count for the purchasing decision factor is -4.538 and the significance value for the purchasing decision factor is 0.000, it can be concluded that there are differences in purchasing decision factors between students of UIN Palembang and Universitas Muhammadiyah Palembang in making purchasing decisions for Islamic bank products or conventional banks.

Islamic banks must socialize to the public about the existence of Islamic banks such as introducing the existence of Islamic banks, mechanism or procedure for saving in Islamic banks, its products and instruments. Islamic banks can use the theory of consumer behavior concerning internal and external factors to attract people to save in Islamic banks. This theory is used to provide understanding and knowledge to the public about Islamic banks and can also be used to influence people’s views about Islamic banks themselves.

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ORIGIN FARMING TECHNOLOGY OF UTILIZING OIL PALM EMPTY FRUIT BUNCH COMPOST AND LEGUMINOSAE PLANT COMPOST TO REDUCE NPK FERTILIZER DOSAGE ON GROWTH AND YIELD OF BROWN RICE (ORYZA NIVARA)

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ABSTRACT
This research was aimed to evaluate the effect of organic and inorganic fertilizer combinations on growth and yield of brown rice (Oryza nivara L). The research was conducted from July to November 2018 in experimental farm of Faculty of Agriculture, Sriwijaya University. The method used in this research was randomized block design with seven treatments and three replications. Treatments given were 100% urea fertilizer, SP-36, KCl (P1); stringbean compost + 25% urea, SP-36, KCl (P2); stringbean compost + 50% urea, SP-36, KCl (P3); oil palm empty fruit bunch compost + 25% urea, SP-36, KCl (P4); oil palm fruit bunch compost + 50% urea, SP-36, KCl (P5); chicken manure fertilizer + 25% urea, SP-36, KCl (P6); and chicken manure fertilizer + 50% urea, SP-36, KCl (P7). Research result showed that the combination of organic and inorganic fertilizer gave better result compared to solely organic or inorganic fertilizer. Treatment with the best result for the growth and yield of brown rice was treatment P5 (oil palm empty fruit bunch compost + 50% N,P,K fertilizer), followed by P7 (manure fertilizer + 50% NPK fertilizer). The highest yield per hectare was treatment P5 with 5.49 tonnes.

KEY WORDS
Inorganic fertilizer, organic fertilizer, brown rice.

Rice is a strategic food commodity for it is the staple food of Indonesian people. Rice is also the backbone of food crops subsector development, important for the realization of food security, and gives critical contribution on domestic product national bruto (Sirappa, 2012). The most commonly found rice in Indonesia is white rice, black rice, and brown rice. Rice has various shape and color for both the plant itself and its seeds. In Indonesia, rice with brown seeds (brown rice) does not receive the same level of attention compared to rice with white seeds (white rice), even if it has high level of nutritional content. The largest rice consumption belongs to white rice (Kristamtini and Prayitno, 2009).

Based on its nutritional content, brown rice is very suitable for places with food shortages, especially with people with malnourished status. Rice with high level of protein is beneficial in improving community nutrition. Antocyanin content in brown rice can be a source of antioxidant good for maintaining health. The composition of 100g brown rice is 7.5 g protein, 0.9 g fat, 77.6 g carbohydrate, 16 mg calcium, 163 g phosphorus, 0.3 g ferrum and 0.21 g vitamin B1. Brown rice contains high amount of fibre, natural oil, and essential fat beneficial for our body (Indriani et al., 2013).

Brown rice generally has low yield (2-3 tonnes ha⁻¹) and matured slowly for around 5-6 months (Moeljoprawiro et al., 2009). An effort to improve brown rice production is through the addition of fertilizer. Agricultural field outside of Java are mostly red-yellow podzolic land with low fertility and poor nutrient (Notohadiprawiro, 2006), thus additional ameliorant material is required. Ameliorant material commonly used is organic fertilizer and chemical fertilizer. The previous problem can be solved by liming, adding high dosage of chemical fertilizer; however this effort is expensive and generates unfavorable effect on soil in addition to causing environmental problem (Setyorini et al., 2004). Conventional agricultural system with chemical fertilizer and pesticides that gradually gets higher in concentration will leave residues that accumulate into environmental contaminant. Organic compound addition to farm fields is required for 95% of Indonesian farm fields has less than 1% of organic
compound while the minimum limit for organic content suitable for agricultural land is 4% - 5% (Padmanabha et al., 2014).

To fulfill the nutrition demand for food crops and to reduce chemical fertilizer, utilizing empty oil palm fruit bunch compost and organic compound from leguminosae plant compost as well as using falow rotation system with leguminosae plant as air-nitrogen anchors can be attempted (balasubramanian and Nguimgo, 1993 in Fitriana, 2013). Manure fertilizer and compost are organic soil compound sources. Compost without inorganic fertilizer treatment can restore soil physical properties and soil water content while increasing soil C-organic concentration. Research result by Fitriana (2015) showed that mucuna compost combined with 50% N,P,K fertilizer gave the best result on upland rice yield. Other organic fertilizers analyzed were oil palm empty fruit bunch (EFB) compost, which contains nutrients needed by soil and crops. Furthermore, Huda’s (2016) research result showed that stringbean compost combined with 50% N, P, and K fertilizer gave the best result for the number of productive tillers, rice grain weight, and 1000 rice grains weight.

MATERIALS AND METHODS OF RESEARCH

The research was conducted in experimental farm of Agronomy Department, Agriculture Faculty, Sriwijaya University, Indralaya. The research was carried out for 6 months from May to October 2018. Soil analysis was conducted in Chemistry, Biology, and Soil Fertility Division, Soil Science Department, Faculty of Agriculture, Sriwijaya University, Indralaya Campus, Ogan Ilir, South Sumatra. Crops tissue analysis was conducted in Plant Physiology laboratory, Faculty of Agriculture, Sriwijaya University. This research used randomized block design to test the influence of fertilizer on brown rice yield and soil fertility. The treatments given were:

P1: 100% N,P,and K fertilizer (200 kg ha⁻¹ urea, 75 kg ha⁻¹ SP-36 and 50 kg ha⁻¹ KCl);
P2: stringbean compost + 25% N, P, K fertilizer;
P3: stringbean compost + 50% N, P, K fertilizer;
P4: oil palm empty fruit bunch compost + 25% N, P, K fertilizer;
P5: oil palm empty fruit bunch compost + 50% N, P, K fertilizer;
P6: chicken manure fertilizer + 25% N, P, K fertilizer;
P7: chicken manure fertilizer + 50% N, P, K fertilizer.

Each organic component was 20 tonnes ha⁻¹, which were stringbean compost, oil palm empty fruit bunch compost, and chicken manure fertilizer. Brown rice medium for planting was prepared. The research used 20kg polybags. Soil was taken from dry land in Agriculture Faculty, Sriwijaya University, Indralaya. The soil was meshed and cleaned off litter before placed inside polybag. Afterwards, composts were added into the polybag according to treatment. Before seeding, the soil was analyzed beforehand to determine the N, P, K, and C contents and soil pH. Brown rice planting was done by putting 5 rice seeds per planting hole. Afterwards, inorganic NPK fertilizers—urea fertilizer, SP-36, and KCl—were given according to treatment. The standard fertilizer dosage was 200 kg urea per ha, 75 kg SP-36 per ha and 50 kg KCl per ha. A third of urea fertilizer and all of SP-36 and KCl fertilizer were given at the start of planting. Two third of urea fertilizer was given on the 4th week post planting. Harvest was done if the rice stalk bend from the weight of the grain, rice grain had hardened by palpation, leaves had yellowed, and if the grain had also yellowed. The parameters observed on brown rice were: 1) plant height, 2) number of tillers per clump, 3) number of productive tillers per clump, 4) percentage of filled grain per clump, 5) grain weight per 1000 grains, 6) the number of grains per panicle, 7) the weight of grain per clump, and 8) yield per hectare. Tissue analysis on brown rice was also conducted.

RESULTS AND DISCUSSION

Rice Growth. The result of analysis of variance showed that organic and inorganic fertilizer combination treatment had significant influence to plant height, number of tillers per clump, number of productive tillers per clump, weight of 1000 grains, weight of grain per
tillers, and yield per ha and insignificantly influence to grain per tiller percentage and number of grains per panicle.

*Plant Height.* The result of analysis of variance showed that organic and inorganic fertilizer combination had significant effect to plant height variable. The tallest value was obtained by P_s treatment (oil palm empty fruit bunch compost (125 g) + 50% N, P, and K fertilizer) with average height of 70.56 cm which did not significantly differ with treatment P_3, P_4, P_6 and P_7, but significantly different with P_1 and P_2 (Table 1).

From Table 1, it can be seen that the tallest crop height was obtained by P_5 treatment (oil palm empty fruit bunch compost (125 g) + 50% N, P, and K fertilizer) which was significantly differed with P_1 treatment (100% NPK fertilizer) and P_2 stringbean compost + 25% N, P, K fertilizer but did not significantly differ with other treatment. P_5 treatment which was oil palm empty fruit bunch compost had relatively high nutritional value such as C-organik 30-40%, C/N ratio of 15-20, N 2-3.5%, P 0.7-1.2%, K 3-5%, Ca 2-4% and Mg 1-2% (Oil Palm Research Center, 2003).

*Number of Tillers per Clump.* Analysis of variance result showed that organic and inorganic fertilizer combination had very significant effect with the number of tillers per clump. The highest number of tillers was obtained from P_7 treatment (manure fertilizer (125 g) + 50% N, P, K fertilizers) with average tillers 47.67 and the lowest number of tillers is P_1 treatment (100% N, P, and K fertilizer) with average number of tillers 21.11. P_7 treatment had significant difference against all treatments. The number of tillers for every clump can be seen on Table 1.

The highest number of tillers was found in P_7 treatment (manure fertilizer + 50% NPK fertilizer) which is 47.67, followed by P_5 treatment (oil palm empty fruit bunch compost + 50% NPK fertilizer) which is 43.55, while the lowest number of tillers was found in P_1 treatment (100% NPK fertilizer) with 21.1. Manure fertilizer and oil palm empty fruit bunch compost gave way higher tillers per clump compared to merely NPK fertilizers without organic fertilizer. In this case, organic fertilizer not only added nutritional value to the soil but also improving soil physical and biology characteristic. Treated soil turned friable, something that cannot be achieved by inorganic fertilizer such as NPK fertilizer.

*Number of Productive Tillers per Clump.* Analysis of variance result showed that organic and inorganic fertilizer combination had significant effect to number of productive tillers per clump. The highest number of productive tiller per clump was found in P_7 treatment (manure fertilizer (125 g) + 50% NPK fertilizer) with an average 23.67 and the lowest number of productive tillers was found in P_1 treatment (100% NPK fertilizer) with an average 11.89. P_7 treatment was significantly different against all treatment. The number of productive tillers for every treatment can be seen in Table 1.

![Graph showing combinations of organic and inorganic fertilizer dosages on average percentage of brown rice filled grain per clump](image)

**Figure 1 – Combinations of organic and inorganic fertilizer dosages on average percentage of brown rice filled grain per clump**

*Percentage of Filled Grain per Clump (%).* Analysis of variance result showed that organic and inorganic fertilizer combination had no significant effect against percentage of filled grain per clump. Highest percentage of filled grain was obtained from P_5 treatment (oil
palm empty fruit bunch compost (125 g) + 50% NPK fertilizer) with average 61.34 and the lowest percentage of filled grain per clump was obtained from P2 (stringbean compost (125 g) + 25% NPK fertilizer) with the average 48.75. Percentage of filled grain per clump can be seen on Figure 1.

**Weight of 1000 Grains (g).** Analysis of variance result showed that organic and inorganic fertilizer had significant effect on the weight of 1000 grains. The highest weight of 1000 grains was obtained from P3 treatment (stringbeans compost (125 g) + 50% NPK fertilizer) with average 29.83 g and the lowest weight of 1000 grains was obtained from P6 treatment (manure fertilizer (125 g) + 25% NPK fertilizer) with average 21.40. P3 treatment was not significantly different with P2 treatment but significantly different with P1, P4, P5, P6, and P7 (Table 1).

**Weight of Filled Grain per Clump.** Analysis of variance result showed that organic and inorganic fertilizer combination had significant effect on the weight of filled grain per clump. The highest weight of filled grain was obtained from P5 treatment (Oil palm empty fruit bunch compost (125 g) + 50% NPK fertilizer) with average value 34.28 g and the lowest weight for filled grain per clump was found in P1 treatment (100% NPK fertilizer) with average 14.77 g. P5 treatment is significantly different against every treatment (Table 1).

**Number of Grain per Panicle.** Analysis of variance result showed that organic and inorganic fertilizer combination did not have significant effect to the number of grains per panicle. The highest number of grains per panicle was obtained from P4 treatment (oil palm empty fruit bunch compost (125 g) + 25% NPK fertilizer) with an average 113.15 and the lowest number of grains per panicle was obtained from P2 (stringbean compost 125 g + 25% NPK fertilizer) with the average 90.87. The number of grain per panicle can be seen from Figure 2.

![Figure 2](image-url)  
**Figure 2** – Combinations of organic and inorganic fertilizer dosages on average percentage of brown rice grains number per panicle

**Yield per Hectare.** Analysis of variance result showed that organic and inorganic fertilizer combination had significant effect to yield per hectare. The highest yield was obtained from P5, which was 5.49 tonnes, which was significantly different with P1, P2, P3, P6, and P7, and not significantly different with P4. The lowest yield was obtained from P1 with 2.36 tonnes (100% NPK fertilizer). The result can be seen from Table 1.

**DISCUSSION OF RESULTS**

Analysis of variance result showed that organic and inorganic fertilizer combination significantly affected crop height, number of tillers per clump, number of productive tillers per clump, weight of 1000 grains, and weight of filled grain per clump, but did not give significant effect to percentage of filled grain per clump and the number of grains per panicle. For crop height, percentage of filled grain, weight of filled grain, and highest yield per ha, the highest value belongs to P5 treatment (oil palm empty fruit bunch compost + 50% NPK fertilizer). This was assumed to occur because the nutritional value in oil palm empty fruit bunch was
very high. Macro nutrition contained in POEFB are as follow: C 35%, K 5.53%, N 2.32%, Ca 1.146%, Mg 0.95% and P 1.146% (Oil palm Research Center, 2003). Oil palm empty fruit bunch compost fertilizer was formulated in granule form, including slow-releasing fertilizer so that it could stand long period of time. Based on brown rice tissue analysis, highest K nutrition value was obtained from oil palm empty fruit bunch. Based on Purnamayani (2014), high K nutritional content in oil palm empty fruit bunch compost fertilizer might increase survival against drought and disease. K nutrition in oil palm empty fruit bunch compost is not easily washed for they are trapped on compost colloid humus and thus can still be available until harvest because of its slow release properties. In a research by Iqbal et al. (2016), stated that combination of oil palm empty fruit bunch compost fertilizer 7.5 tonnes/ha with P2O5 46.575 kg/ha can give highest yield for upland brown rice.

Organic and inorganic fertilizer combination treatment significantly affected number of tillers and productive tillers per clump. The highest number of tillers and productive tillers per clump was obtained in P7 treatment (manure fertilizer (125 g) + 50% NPK fertilizer) with the average 47.67 and 23.67. The use of (chicken) manure is better than other kind of manure where every tonne of chicken manure has 65.8 kg N, 13.7 kg P and 12.8 kg K whereas the same amount of cow manure only has 22 kg N, 2.6 kg P, and 13.7 kg K (Nurhayati, 1988). Several research on application of chicken manure fertilizer always gave the best plant response in the first season. This happened for chicken manure fertilizer is relatively fast to decompose with adequate nutrition value compared to other fertilizer in the same unit (Widowati et al, 2005). The highest number of tiller was obtained from P7 (chicken manure + 50% NPK fertilizer) which was 47.67 followed by P5 (oil palm empty fruit bunch compost + 50% NPK fertilizer) with 43.55, while the lowest number of tillers was obtained in P1 treatment (100% NPK fertilizer) with 21.22. Chicken manure fertilizer and oil palm empty fruit bunch compost reached way higher number of tillers compared with only NPK fertilizer without organic fertilizer. In this case, organic fertilizer not only added nutrition but also improve soil physical and biological properties by making it more friable, something that inorganic fertilizer such as NPK fertilizer cannot provide.

Table 1. Combinations of organic and inorganic fertilizers on all observed parameters

| Treatment | Parameter | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
|-----------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|
| P1        |           | 59.33 | 21.11 | 11.89 | 55.09 | 22.60 | 14.77 | 101.06 | 2.36 |
| P2        |           | 66.44 | 36.78 | 18.44 | 48.74 | 25.00 | 18.84 | 90.87  | 3.02 |
| P3        |           | 69.00 | 40.33 | 21.22 | 53.66 | 29.83 | 26.23 | 94.41  | 4.20 |
| P4        |           | 67.00 | 37.22 | 19.56 | 61.01 | 21.67 | 29.88 | 113.15 | 4.78 |
| P5        |           | 70.56 | 43.55 | 23.11 | 61.34 | 22.77 | 34.28 | 109.58 | 5.49 |
| P6        |           | 69.33 | 37.67 | 20.56 | 53.36 | 21.40 | 28.08 | 104.27 | 4.49 |
| P7        |           | 70.00 | 47.67 | 23.67 | 54.20 | 23.33 | 27.28 | 96.71  | 4.36 |

LSD 0.05 3.63 6.02 3.72 4.88 4.97 0.80

Notes:
P1: 100% N,P,and K fertilizer (200 kg ha⁻¹ urea, 75 kg ha⁻¹ SP.36 and 50 kg ha⁻¹ KCl);
P2: stringbean compost + 25% N, P, K fertilizer;
P3: stringbean compost + 50% N, P, K fertilizer;
P4: oil palm empty fruit bunch compost + 25% N, P, K fertilizer;
P5: oil palm empty fruit bunch compost + 50% N, P, K fertilizer;
P6: chicken manure fertilizer + 25% N, P, K fertilizer;
P7: chicken manure fertilizer + 50% N, P, K fertilizer;

1) plant height, 2) number of tillers per clump, 3) number of productive tillers per clump, 4) percentage of filled grain per clump, 5) grain weight per 1000 grains, 6) weight of filled grain per clump 7) number of grains per panicle, and 8) yield per hectare.

In 1000 grains weight variable, the highest weight was obtained from P3 treatment (stringbean compost (125 g) + 50% NPK fertilizer) with the average of 29.83. P3 treatment has high 1000 grain weight and big grain size compared to other treatment. Stringbean plant is a leguminose with high content of N, with its components consist of N (65 Kg ha⁻¹), P (6 Kg ha⁻¹), K (33 Kg ha⁻¹), Ca (23 Kg ha⁻¹), Mg (16 Kg ha⁻¹), and S (6 Kg ha⁻¹) (Saraswati, 2006).
CONCLUSION

Conclusions proposed from this research is that the best treatment for the growth and yield of brown rice is P5 treatment (oil palm empty fruit bunch compost + 50% NPK fertilizer) followed by P7 (manure fertilizer + 50% NPK fertilizer). The highest yield per hectare was obtained from P5 with 5.49 tonnes. Suggestions that could be given based on this research is to use organic fertilizer such as manure fertilizer and Leguminosae compost combined with NPK fertilizer on 50% dosage for brown rice planting.

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ABSTRACT
Information about the benefits and results of fisheries counseling on fishermen can be seen from the aspects of perceptions and participation of fishermen in participating in the fisheries extension program. This study aims to determine the factors that influence the participation of fishermen in fisheries extension programs viewed from the aspect of perceptions of the program itself and also the socio-economic characteristics of the fishermen. The method used is structural equation modeling (SEM) using the Amos 24 application. In this study 4 latent variables were used, namely fisherman characteristics, perceptions of fisheries instructor competencies, perceptions of fisheries extension services, and participation in fisheries counseling. The results of the study show that the factors that greatly influence participation in fisheries counseling are socio-economic characteristics including training, education, and organization, while in terms of perceptions of instructor competencies, the most important factor is the andragogic competence of the instructor itself. The variable perception of service shows that indicators of methods and techniques show the most dominant results. To increase the participation of fishermen in extension programs, training and socialization of the benefits of fisheries counseling need to be improved, besides that it is also necessary to encourage fishermen to join the fishing group. Whereas in terms of fisheries extension agents who carry out their duties, extension methods and techniques need to be improved with variations in extension materials and techniques. In addition, the involvement of fishermen in fisheries counseling (andragogic competencies) is expected to be able to increase patriarchy in fisheries counseling.

KEY WORDS
Perception, participation, fisheries extension, Structural Equation Modeling.

Cilacap Regency is one of the largest capture fisheries centers in Central Java Province. The administrative area of Cilacap Regency consists of 24 sub-districts. Cilacap Regency is also one of the districts in Central Java Province which is located on the southern coast of Java which has the highest number of fishermen compared to other districts in Central Java Province. The results of the Fisherman Card data collection in 2017 recorded more than 13,000 active fishermen conducting fishing businesses in this district.

The management of capture fisheries development in almost all regions of Indonesia cannot be separated from the management and development of fishermen's human resources as the main actors and business actors in this subsector. One approach to developing fishermen's human resources is through fisheries extension activities. This is in accordance with the strategic plan of the Ministry of Maritime Affairs and Fisheries for 2015-2019. According to Sumardjo (2008) the main focus of extension is human development as part of the social system. Extension attempts to construct community structures in a convergent, dialogical, democratic and participatory manner.

Information about the benefits and results of fisheries extension programs can be seen in terms of perceptions and participation of fishermen as beneficiaries of fisheries extension services, so that it can be seen how the fishermen receive fisheries extension programs that
have been implemented. Chaigneau (2016) shows that people's perceptions are influenced by one's views on a situation, fact or action. Therefore individuals need to clearly understand the goals and responsibilities given to them. One of the basic factors of perception is the ability of people to gather limited facts and parts of information and then arrange in a complete description.

Sofia's results (2015) showed that fishermen's perceptions of the instructor's competence were able to increase fishermen's participation in extension. Where this indicates that a fisherman will feel comfortable when the instructor can explain the extension program easily and interestingly. The results of the Arlinghaus et al. (2015) study show that the perception of fishermen on extension services is able to increase the participation of fishermen in extension. Where this indicates that a fisherman will feel comfortable participating in extension when the extension provides good service to fishermen.

Based on the description above, knowledge of the factors that influence fishermen's participation in extension programs is needed so that fisheries extension, especially for fishermen in coastal areas, can be effective and efficient. Therefore this study aims to determine the factors that influence fisherman participation seen from the aspect of extension services and the competence of fisheries educators, especially in the coastal areas of Cilacap Regency.

MATERIALS AND METHODS OF RESEARCH

This research was conducted in Cilacap Regency as one of the capture fisheries centers in Java and also in Central Java Province. The research area is specifically in nine sub-districts that have coastal areas so that it can be ascertained that these sub-districts are fishing centers. The nine sub-districts are Patimuan, Kampung Laut, South Cilacap, Central Cilacap, North Cilacap, Kesugihan, Adipala, Binangun, and Nusawungu. This Research is conducted from December 2018 to January 2019.

The study population was all small fishermen with vessels less than 10 GT in Cilacap Regency. The population of fishermen is 12,719 people (2017 Cilacap Statistic Board). The method used is the survey method with the number of samples taken as many as 180 respondents selected purposively from fishermen who had attended extension activities along the coast of Cilacap Regency.

Table 1 – Fisherman Population and Number of Samples Taken

| No | Sub District | Fishermen Population (2016) | Amount Of Sample |
|----|--------------|----------------------------|------------------|
| 1  | Patimuan     | 389                        | 10               |
| 2  | Kampung laut | 1461                       | 20               |
| 3  | Cilacap tengah | 1589                     | 20               |
| 4  | Cilacap selatan | 4674                     | 55               |
| 5  | Cilacap utara | 2298                      | 30               |
| 6  | Kesugihan    | 696                        | 10               |
| 7  | Adipala      | 584                        | 10               |
| 8  | Binangun     | 72                         | 10               |
| 9  | Nusawungu    | 956                        | 15               |
|    | Total        | 12,719                     | 180              |

Source: 2017 Cilacap District Statistic Book.

To find out the factors that influence the level of participation of fishermen in the coastal area of Cilacap in fisheries extension, the research carried out was a type of survey research using a questionnaire to obtain the required data from respondents. The method used is a non-experimental design method, because all data to be taken has been available in the field and indeed no control over the overall variables used.

The data analysis used in this study is the Structural Equation Modeling (SEM) model, used to determine the factors that influence fishermen's participation in fisheries extension programs. The stages in SEM analysis in this study include the study of the theory, specification of the model, estimation, hypothesis testing, and interpretation of the model.
In studying a person’s perception or group, knowledge is needed about the characteristics of a person or group. Nababan (2017) states that the socio-economic characteristics of fishermen can influence the perception of fishermen. The socio-economic characteristics in question are age, education, experience, organizational experience, training experience, scale of business and dependents. Therefore in this study socio-economic characteristics can be used as exogenous variables (X).

Furthermore, in determining the endogenous variables that will be included in the model in fisheries extension programs that are programs related to the field of service to the community, of course the most influential thing is the ability of extension agents to carry out extension and extension services themselves. Therefore the first endogenous latent variables included in the model are perceptions of instructor competencies (Y1) that relate to the ability of fisheries instructors in conducting fisheries extension activities. Based on the SKKNI (National Work and Competence Standard) of fisheries extension that the instructor’s competence consists of personality, andragogic, professional, and social competencies (Farida, 2012; Haryadi, 2014; Zulfikar, 2017).

Table 2 – Latent variables and indicator in model

| Latent Variable                                           | Indicator                                                                                   | Description                                                                                   |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Socio-economic characteristics (X)                        | The opinion of fishermen on factors that might affect the character of the fisherman which consists of: | It is a question of whether these characteristic factors affect the character of the fisherman. |
|                                                           | Age (X1)                                                                                     | Data in the form of scale like likert with values (1) strongly disagree, (2) disagree, (3) doubt, (4) agree, (5) strongly agree |
|                                                           | Education (X2)                                                                               |                                                                                               |
|                                                           | Experience (X3)                                                                              |                                                                                               |
|                                                           | Organization (X4)                                                                            |                                                                                               |
|                                                           | Training / socialization (X5)                                                                 |                                                                                               |
|                                                           | Business Scale (X6)                                                                          |                                                                                               |
|                                                           | Revenue (X7)                                                                                 |                                                                                               |
|                                                           | Family members (X8)                                                                          |                                                                                               |
| Perception of Competence of Fisheries Extension officer (Y1) | Perception of Individual competence (Y11)                                                   | Based on the Minister of Manpower and Transmigration Regulation No. 403 of 2014 concerning SKKNI Fisheries Extension, which was translated according to Sumardjo (2009). Data in the form of like likert scale data about questions related to Perception about Competency extension officers then tabulated and ranked according to scale: |
|                                                           | Perception of Competence (Y12)                                                               | (1) Very low                                                                                   |
|                                                           | Perception of Professional Competence (Y13)                                                 | (2) Low                                                                                       |
|                                                           | Perception of Social Competence (Y14)                                                       | (3) Moderate                                                                                  |
| Perception of extension services (Y2)                     | Extension Intensity (Y21)                                                                    | (4) High                                                                                      |
|                                                           | Extension material (Y22)                                                                     | (5) Very High                                                                                 |
|                                                           | Methods and Extension Techniques (Y23)                                                      |                                                                                               |
| Fisherman Participation in Extension Program (Y3)          | Extension planning (Y31)                                                                    | Data in the form of data like Likert scale about questions related to fisherman participation in Extension Programs and then tabulated and ranked according to scale: |
|                                                           | Implementation of extension (Y32)                                                            | (1) Very low                                                                                  |
|                                                           | Enjoy the results of extension (Y33)                                                        | (2) Low                                                                                       |
|                                                           | Evaluation of the extension program (Y34)                                                    | (3) Moderate                                                                                  |
|                                                           |                                                                                             | (4) High                                                                                      |
|                                                           |                                                                                             | (5) Very High                                                                                 |

Source: Nababan (2017), Zulfikar (2017), Haryadi (2014), Farida (2012).
Then the second endogenous latent variable is the perception of extension services (Y2) which is the interpretation of fisheries extension activities itself which consists of the intensity of extension, methods, materials and extension techniques. Fisheries extension program is a program that has the nature of direct service to the community so that the extension agent as a subject and extension service plays an important role in the formation of perceptions (Farida, 2012; Haryadi, 2014; Zulfikar, 2017).

The next endogenous latent variable is participation in an extension program that is determined by evaluating participation in each stage of extension starting from planning, implementing, enjoying the program or the results and evaluation. Saptorini (2003), Ayunita and Hapsari (2012), Nababan (2017) states that good public perceptions will encourage high community participation. Besides perceptions, the socio-economic characteristics of fishermen are also used as variables that influence participation (Saptorini, 2003; Yuwono 2006; Nababan 2017).

The exogenous latent variable used consisted of fishermen's opinion on the factors that might influence the character of the fisherman consisting of age, education, experience, organization, training, business scale, income, dependents. While the endogenous latent variables used were three, namely perceptions of the ability of extension agents to carry out extension consisting of perceptions of instructor competencies with the observed variables including perceptions of the individual, andragogical, professional and social aspects of the existing fisheries instructors. And perceptions of extension services with the observed variables are intensity, material and methods of extension. Besides the last endogenous variable is the participation of fishermen in participating in fisheries extension with the observed variables being participation in planning, implementing, enjoying the results, and evaluating fisheries extension.

In this study using the Maximum Likelihood Estimator (MLE) estimator. For research with a moderate number of indicators and a limited scope of areas, many researchers use this model estimator. Goodness of Fit examination is carried out at the next stage or after the estimation is made. Respecification by utilizing information on Modification Indices (MI) through AMOS 24 software and carried out if the feasibility measure of a model does not meet (Haryono & Wardoyo, 2012). Hypothesis testing is done to test whether the regression coefficient obtained is significant at the 95% confidence interval.

RESULTS AND DISCUSSION

Structural equation models of the factors that influence fishermen's participation in fisheries extension programs are seen from the characteristics and perceptions of extension programs can be seen from Figure 1. Models that have been formed and estimated are then interpreted to obtain information that is useful for the development of fisheries extension programs specifically to small fisherman.

A good model is a model that has Goodness of Fit (GOF) that meets the criteria. In this study the size of Goodness Of Fit (GOF) can be seen in table 3. It can also be seen in outline the value of Goodness Of Fit (GOF) in the estimated model at the marginal fit index, which is between 0.80-0.90, so it can be concluded that the estimated model is good with a good level of compatibility too.

The coefficient of determination (R²) is indicated by the value of Squared Multiple Correlations. The magnitude of the coefficient of determination for the Participation variable (Y3) is 0.322. Meaning that the participation variable has been explained by 32.2% by the variables contained in the model, and the remaining 67.8% participation of fishermen is influenced by other factors.

There are two influences that exist between the latent variables that are interconnected, namely direct or indirect influences. While the direct influence on the model is six direct influences which are translated into six hypotheses, namely:

Hypothesis 1:
H₀: Individual characteristics have no effect on perceptions of instructor competency;
H₁: Individual characteristics influence the perception of the instructor's competence.
Hypothesis 2:
H₀: Individual characteristics do not affect the perception of extension services;
H₁: Individual characteristics influence the perception of extension services.

Hypothesis 3:
H₀: Individual characteristics do not affect participation in extension;
H₁: Characteristics of individuals influence participation in extension.

Hypothesis 4:
H₀: Perceptions of extension services have no effect on perceptions of the competence of extension agents;
H₁: Perception of extension services has an effect on perceptions of the competence of extension agents.

Hypothesis 5:
H₀: Perception of the instructor’s competence does not affect participation in extension;
H₁: Perception of counselor’s competency influences participation in extension.

Hypothesis 6:
H₀: Perception of extension services does not affect participation in extension;
H₁: Perception of extension services influences participation in extension.

Figure 1 – Structural equation model of the factor that affecting fishermen participation in fisheries extension program

Table 3 – Model Goodness of Fit (GOF)

| No | Model Fit Terms          | Result | Model Evaluation |
|----|-------------------------|--------|------------------|
| 1  | Chi Square              | 187.857| Good             |
| 2  | Probability             | >0.05  | Not Good         |
| 3  | Root Mean Square Error (RMSEA) | ≤ 0.8 | 0.042 | Good |
| 4  | CMIN/df                 | <5     | 1.323 | Good |
| 5  | GFI                     | ≥ 0.9  | 0.905 | Good |
| 6  | AGFI                    | ≥ 0.9  | 0.873 | Moderate |
| 7  | TLI                     | ≥ 0.9  | 0.954 | Good |
| 8  | CFI                     | ≥ 0.9  | 0.962 | Good |

Source: Data Processing Result, 2019.

In seeing which decisions will be taken, it can be seen from the probability value (p-value), if the value (p-value) is equal to or smaller than 0.05 then H₀ is rejected and H₁ is accepted. Furthermore, the results of the regression coefficients and the results of
Table 4 – Direct effect between each latent variable

| Regression | Coefficient | Standardized Coefficient | t-stat | p-value | Hypothesis | Decision |
|------------|-------------|--------------------------|--------|---------|------------|----------|
| Y1<--X    | 0.384       | 0.284                    | 2.746  | 0.006   | Hypothesis 1 | H1:Accepted |
| Y2<--X    | 0.757       | 0.444                    | 4.133  | 0.000   | Hypothesis 2 | H1:Accepted |
| Y3<--X    | 0.312       | 0.222                    | 2.183  | 0.029   | Hypothesis 3 | H1:Accepted |
| Y1<--Y2   | 0.230       | 0.290                    | 2.749  | 0.006   | Hypothesis 4 | H1:Accepted |
| Y3<--Y1   | 0.205       | 0.197                    | 2.002  | 0.045   | Hypothesis 5 | H1:Accepted |
| Y3<--Y2   | 0.247       | 0.299                    | 2.741  | 0.006   | Hypothesis 6 | H1:Accepted |

Source: Data Processing Result, 2019.

Table 4 shows that all direct effects produce a smaller or equal p-value of 0.05 so that the decision taken is to accept all H1, the most significant thing is that fishermen's characteristics influence the perception of extension services with a p-value of 0.000. While the lowest is the perception of extension competencies affecting participation in fisheries extension with a p-value of 0.045. From the elaboration of the results of the above model tests it can be seen that the characteristics and perceptions of competency and fisheries extension services affect the participation of small fishermen in fisheries extension.

While the existing latent variables also have an indirect influence on other variables through intervening variables. The value in table 5 can show direct effect, indirect influence and total influence between existing latent variables.

In Table 5, it can be seen that the value of the indirect effect between the characteristics of fishermen (X) and participation (Y3) is 0.214. This value is the value of the magnitude of the influence of fisherman characteristics (X) on participation (Y3) through the perception variable on the instructor's competency (Y1) and through the perception variable on fisheries extension services (Y2). The value of the indirect effect and the direct effect value are almost the same, were 0.222 and 0.214. This value can be explained that the two variables were perceptions of instructor competency (Y1) and perceptions of extension services (Y2) are intervening variables that influence fisherman's participation in fisheries extension.

Table 5 also shows the value of the total effect of independent latent variables (X, Y1, Y2) on the dependent latent variable (Y3). The biggest total influence is the influence of fisherman characteristics (X) on participation (Y3), the existing value shows an indirect effect of 0.436 so that it can be explained that the fisherman's character and the instructor's ability to increase fisherman participation are equally influential and have an effect of 0.436. While the perception of services and perceptions of the competency of fisheries instructors provide an influence value of 0.356. This shows that the perception of extension services is far more influential in increasing fisherman's participation in fisheries extension program.

In addition to some of the relationships above, other relationships that can be analyzed from the model are relationships between latent variables and their manifest variables (indicators of each variable). The value of the relationship that occurs is indicated by the value of the load factor (loading factor) of each indicator. The highest value of each of these indicators is the indicator that has the most or most dominant role in explaining its latent variables. The loading factor value can be seen in Table 6.
Table 6 – Factor loading of each latent variable

| Manifest | Factor loading | Standardized Factor loading | t-stat | p-value | Explanation |
|----------|----------------|-----------------------------|--------|---------|-------------|
| KAR1(X1) | 1.203          | 0.665                       | 6.232  | 0.000   | Significant |
| KAR2(X2) | 1.754          | 0.760                       | 6.673  | 0.000   | Significant |
| KAR3(X3) | 0.941          | 0.484                       | 5.097  | 0.000   | Significant |
| KAR4(X4) | 1.583          | 0.705                       | 6.427  | 0.000   | Significant |
| KAR5(X5) | 1.878          | 0.831                       | 6.932  | 0.000   | Significant |
| KAR6(X6) | 0.691          | 0.507                       | 4.910  | 0.000   | Significant |
| KAR7(X7) | 0.695          | 0.445                       | 4.796  | 0.000   | Significant |
| KAR8(X8) | 1.000          | 0.522                       | -      | 0.000   | Significant |
| PERPri(Y11) | 1.000      | 0.719                       | -      | 0.000   | Significant |
| PERAndra(Y12) | 0.966    | 0.763                       | 9.017  | 0.000   | Significant |
| PERProf(Y13) | 0.956     | 0.741                       | 8.810  | 0.000   | Significant |
| PERSos(Y14) | 0.967      | 0.734                       | 8.738  | 0.000   | Significant |
| PERInt(Y21) | 0.767       | 0.679                       | -      | 0.000   | Significant |
| PERMat(Y22) | 0.911      | 0.668                       | 7.297  | 0.000   | Significant |
| PERMet(Y23) | 1.000       | 0.755                       | 7.230  | 0.000   | Significant |
| PARRen(Y31) | 1.000       | 0.697                       | -      | 0.000   | Significant |
| PARLak(Y32) | 1.119       | 0.800                       | 8.615  | 0.000   | Significant |
| PARHas(Y33) | 1.025       | 0.752                       | 8.380  | 0.000   | Significant |
| PAREv(Y34) | 0.913        | 0.647                       | 8.509  | 0.000   | Significant |

Source: Data Processing Result, 2019.

Table 6 shows that of the eight exogenous indicators all variables showed significant values, the values of the eight variables were training and outreach indicators (X5) and education indicators (X2) which showed the most dominant value in explaining the latent variables.

While the endogenous variables (Y1, Y2, and Y3) also show significant values. The most dominant indicator of the perception variable on fisheries extension instructor competencies (Y1) is Andragogic Competence (Y12). The most dominant indicator of the perception variable on extension services (Y2) is the perception of extension methods and techniques (Y23). Furthermore, the most dominant indicator of the variable participation of fishermen in fisheries extension (Y3) is participation in the implementation of fisheries extension.

DISCUSSION OF RESULTS

Based on the results of research and data processing in the AMOS 24 application at a 95% confidence level (alpha-0.05), the socio-economic characteristics of fishermen were able to influence the participation of fishermen in fisheries extension programs. The influence of the socio-economic characteristics of fishermen is able to provide an influence value of 0.22. This shows that the higher the level of social economic characteristics of fishermen, the more their participation in extension programs, but the characteristics are not the only factors that contribute to the participation of fishermen in extension programs.

The indicators found in the latent variables of the socio-economic characteristics of the most contributing fishermen are training/socialization, education and organization. These results indicate that the indicators that most play a role in the formation of variable characteristics of fishermen especially encourage fishermen to participate in fisheries extension programs. The results also meant that fishermen who had attended training and outreach tended to participate more than other fishermen in fisheries extension. Therefore, the need for appropriate training and socialization and also the intensification of training and outreach to fishermen needs to be added. Training and outreach to fishermen is a concrete form of support from the government and policy makers in the field of marine and fisheries towards the existence of small fishermen. Mardijono (2008) states that a comprehensive and sustainable socialization is needed for the community regarding government programs.
In addition, based on the results of the existing model, education and organizational experience also have an influence in encouraging fishermen to participate in fisheries extension. The need to develop fishing organizations is also a real step in improving fishermen's institutions which will lead towards fishermen who have more insight into business management. The growth program and development of existing fishermen groups should continue to be considered and improved by fisheries extension workers, so that new groups will be formed and existing groups will develop their business management. Education is also one indicator that plays a role in forming the characteristics of fishermen. This can be considered also to make fishermen who have higher education than surrounding fishermen to be able to run group management so that other fishermen around them can benefit from extension. This has been applied to the fishermen of Rawajarit, Subdistrict Kesugihan Village who appoint a fisherman with a higher level of education to manage the group as well as the cooperatives that are run.

Fishermen's perception of the competency of fisheries instructors also significantly influences their participation in fisheries extension programs. The results of the calculation of the existing model show a positive value which means that fishermen who assess the competency of fisheries instructors with higher scores tend to have better participation. The indicators that have the most role in increasing fishermen's participation through their perceptions of the competency of fisheries instructors are the andragogic competencies of fisheries instructors. Haryadi (2014) explains that Andragogic Competence of fisheries extension agents is the ability of fisheries instructors to understand and develop learning needs to change. The meaning is how the ability of the fisheries extension agent to better involve fishermen in the structure of the fisheries extension process.

According to Haryadi (2014) that fisheries extension agents in Cirebon Regency also need to improve their competencies so that the perceptions of farmers to extension programs are higher. Baba (2011) also stated that perceptions of cattle farmers in Enrekang District on extension had a positive effect on the level of participation in extension, the better their perceptions of extension, the higher the level of participation. The functional ability factor of the instructor itself also greatly influences the level of participation of farmers in Enrekang Regency in participating in Extension. Therefore, it can also be concluded that the instructor's competencies need to be improved so that fishermen's participation in fisheries extension activities can also be maximized.

In addition to fishermen's perceptions of the competence of extension agents, data on fishermen's perceptions of extension services were also successfully collected and summarized. The results show that fishermen's participation in extension also depends on how the fisherman extension services itself. Existing values indicate that services have a greater role than fishermen's perceptions of their extension competencies. This happens because the approach to fishermen is a bit more difficult than the approach to other business actors such as processors and farmers. Time limitations and low levels of education are the main factors in conducting extension services to fishermen. However, when fishermen feel comfortable with the extension, extension activities will be a little easier to do.

Extension workers in Cilacap Regency are also still very limited so that to serve a large number of fishermen along the coast of Cilacap, there are also a few obstacles. This can be seen from the indicators of extension intensity which are considered lower than other indicators in Perception of extension services. But in terms of methods and techniques of extension in Cilacap District in general it has been very mastering, as well as in terms of extension materials which are considered to be quite good. This is also caused by the extension workers at many expert and senior levels being placed in fishing center sub-districts in Cilacap Regency.

The participation variable shows that indicators of the implementation of fisheries extension are still the most dominant indicator in fishermen's participation in fisheries extension. This shows that the participation of Cilacap District fishermen in fisheries extension is still limited to the implementation stage and enjoying the results, but in terms of fisheries extension planning and evaluation of fisheries extension is still lacking. In the fisheries patrisipation planning stage, it is still limited to fishermen who are generally elder.
and administrators of the fishermen group itself. Besides that, the awareness of fishermen to assist in the planning stage such as collecting initial data is also very low, as well as during fisheries extension evaluations. Community participation in community forest development in partnership patterns is also low at the planning and evaluation stage because at that stage the opportunity to participate is given to certain communities, namely leaders or community leaders (Yuwono, 2006). Mardijono (2008) also concluded that fishermen’s participation in the management of the Batam City Marine Protected Area was also very good at implementation but slightly reduced at other stages, especially monitoring and evaluation.

CONCLUSION

The socio-economic characteristics that most play a role in increasing participation in extension are training and outreach, education and organization, while the perception of the competency of fisheries instructors who plays the most important role is the perception of andragogic competencies of fisheries instructors.

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ANALYSIS OF FACTORS AFFECTING THE SATISFACTION AND LOYALTY OF THE USE OF CARGO SERVICES: A CASE STUDY OF PT. BEX

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ABSTRACT
The logistics industry is an important industry that plays an important role for other industries. Business uncertainty currently has an impact on almost all industries. Likewise, the logistics industry has also been explained to experience a decline in sales in almost every year. This study uses the PLS approach to solve research problems. The results of the study show that there are several variables that have an important influence on customer satisfaction and loyalty.

KEY WORDS
Intimacy cargo, logistics, satisfaction, loyalty.

The logistics industry is an important industry that plays an important role for other industries. The logistics company becomes the liaison for other companies in order to deliver raw materials, finished goods and or other goods to other targeted companies. Rahayu (2014) explained that the logistics industry could develop if there were economic developments and increased trade in a country.

Economic development into the factors described can affect the development of other businesses, especially the logistics business. Amid the uncertainty of the country, Indonesia managed to grow an average of 5.61 percent since 2010-2017. This is the basis that Indonesia's business climate can continue to grow at any time (Figure 1).

From Figure 1 it is known that the Indonesian economy tends to decline due to several important moments including in 2011 a crisis in America and Europe which affected Asia including Indonesia. In addition, in 2014 the rupiah exchange rate fell again, causing Indonesia's economic growth to slow down.

The progress of the logistics industry in Indonesia is inseparable from the influence of technological developments and information systems. It is known that the multiplier effect of the ecommerce business has an influence on the growth of the logistics industry by 30 percent (Asperindo 2017). This is due to the increasing use of e-commerce and people who want to be more practical.
The logistics industry that continues to grow and gets bigger every time causes many business actors to glance and are interested in being involved in the business. This of course can have an influence on the increasing level of competition between companies. Therefore we need a step that can win the competition in the logistics industry.

PT BEX is a company engaged in the logistics industry that has been established since 2000. PT BEX has a main focus on business activities related to the distribution of goods that require special handling and time. This is the basic force for companies to win competition from similar companies.

PT BEX is currently conducting program intimacy. This concept is part of marketing activities related to the ability of service providers to be more accepted and recognized as permanent partners by their customers. Basically, the more accepted the marketer or company, the better the interaction between the increase in the output increases as well. From these considerations, it was considered important to make several questions, among others: (1) What is the physical response, reliability, responsiveness, assurance, intimacy towards satisfaction in using cargo at PT BEX? (2) What is the effect of satisfaction on loyalty in using cargo at PT BEX? (3) How to formulate a management policy in increasing customer loyalty?

LITERATURE REVIEW

Products represent all economic activities that are produced from physical forms but can be produced together to provide added value to the product (Zeithaml & Bitner 1996). Kotler (2010) describes services that can be offered and are intangible. This is also discussed by Nasution (2004) which states that providing services related to the economy that produces is not in accordance with what is given to customers.

Service quality is a measure that is considered. The level of service provided is in accordance with expectations (Tjiptono 2006). Payne (2007) states that service quality supports organizations in providing services to meet needs exceeding customer expectations. Parasuraman et al. (1998) state a quality model that describes the expectations of customers related to expectations and perceptions of perception.

Physical Evidence presented by Payne (2000) about the components in it. There is a physical environment provided by the company which then provides services that can be performed by each other. Physical evidence is the physical environment at the time the product is made. Lupiyoadi (2013). Zeithaml et al (2009) states that the physical evidence of the product represents all aspects that contain the physical organization and communication of the product offered.

Reliability is the company’s ability to provide services that are in accordance with the promised, appropriate and reliable (Lupiyoadi 2001). Performance in service is required to be in accordance with customer expectations or in accordance with what was promised in the service. Where this is often related to timeliness, attitude and high accuracy.

Responsiveness is an ability to help and provide fast and appropriate to customers (Lupiyoadi 2001). This is confirmed by the statement of Tjiptono (2010) which explains that responsiveness is the desire of the staff to help customers and provide the best service.

Intimacy is the closeness of someone who is done by sharing deep thoughts and feelings (Atwater 2009). This is explained by Sternberg (2006) which states that intimacy is an emotional element in a relationship that involves self-disclosure, which later is expected to be able to make a connection and trust (emotional).

Price is defined as the amount of money charged for the purchase of a product or service (Kotler & Armstrong 2012). Lamb (2001) says prices are a measure that must be given by consumers (buyers) to get a product. Prices are often the most flexible element among the four marketing mix elements. Dharmesta (2008) states that price is the amount of money needed to get a number of combinations of products and services.

Customer satisfaction is an important indicator of a business activity. Kotler (2010) customer satisfaction is a response from customers for evaluation of perceived nonconformities between perceived expectations and product performance.
Consumer loyalty is consumer loyalty to companies, brands and products (Rangkuti 2002). Customer loyalty is an important thing that can influence the relationship between consumers and companies (Costabile et al. 2002).

Research Hypothesis. This study has 7 hypotheses, among others: H1: Physical evidence that affects consumer satisfaction, H2: Strengthening reliability of customer satisfaction, H3: Responsiveness to customer satisfaction, H4: Guarantee of customer satisfaction, H5: Guarantee satisfaction with customer satisfaction, H5: H6: Intimacy aimed at customer satisfaction, H7: Priority satisfaction with consumer loyalty.

METHODS OF RESEARCH

This research was conducted with consumer objects from PT BEX headquartered in Jabodetabek. This was chosen because the majority of consumers who carry out large amounts of shipping activities are in the area. In addition, this research will be conducted from November to December 2018.

This research uses quantitative and associative approaches. Quantitative approach is a method based on the use of numbers that starts from data collection, analysis and appearance of the results of the study (Arikunto 2013) while associative is a method used to explain the causal relationship and the effect of each variable tested by hypothesis (Sugiyono 2013).

The sample of this study amounted to 120 respondents. Hair et al (2010) stated that sampling was a good sample in a study if the number was 5-10 times the indicator used in the study.

The scale of research is used as a basis for reference agreement in determining the range of a measuring instrument. This study used the Likert scale Sumarwan (2017): Strongly agree (4), agree (3), Disagree (2), Strongly Disagree (1).

The data collection technique used in this study was purposive sampling, where researchers were required to make eligible sample criteria to be chosen in the study. Criteria set by consumers who have used the service at least 3 times and Consumers who make delivery with a value of more than Rp 1,000,000 per shipment. This is intended for special consumers.

In this study using descriptive analysis. According to Sumarwan (2017), descriptive is a research method whose purpose is to describe the characteristics of an object of people, groups, organizations and the environment. In this study descriptive analysis is intended to find out an explanation of the state of the object of research, besides that this method is used to find the relationship of existence of variables without making comparisons with others.

Partial Least Square (PLS) is a regression-based method that was introduced for the creation and development of models and methods for the social sciences with an approach oriented to the prediction of Ghozali (2006). PLS assumes that research data is free of distribution, meaning that research data does not refer to one particular distribution (eg normal distribution). PLS is an alternative method of SEM that can be used to overcome the problem of relationships between complex variables (Hair et al 2010).

RESULTS AND DISCUSSION

PT Bersaudara Express Cargo (bexindo) is a logistics and distribution company established in Jakarta on March 14, 2000. In its first year of operation, BEX has facilitated all the health equipment of the company it manages throughout Indonesia. The second year and so on until now, BEX has increased its market and proudly succeeded in leading companies like you.

Indicator validity testing is a test conducted to ensure the indicators used in the research model are appropriate and appropriate when used. In the partial least square method a limit of 0.5 is used to state that an indicator is valid (Hair et al 2010), is an outer test of the partial least square model. In addition, by testing validity, it is expected to get indicators that can be
used as recommendations related to contributions to the variables. An overview of the
validity of indicators is presented in Table 5.

| Table 4 – Description of respondents |
|-----------------------------------|
| Category | Total (n) | Percentage (%) |
|----------|----------|----------------|
| Gender   |          |                |
| Male     | 102      | 85             |
| Female   | 18       | 15             |
| Medical devices | 36      | 30             |
| Pharmacy | 45       | 38             |
| Electronic | 6       | 5              |
| Types of goods |        |                |
| Chemistry | 5        | 4              |
| Fashion  | 10       | 8              |
| Machine  | 15       | 13             |
| Other products | 3      | 3              |
| Bekasi   | 18       | 15             |
| Bogor    | 9        | 8              |
| Depok    | 14       | 12             |
| Location |          |                |
| Jakarta  | 49       | 41             |
| Semarang | 5        | 4              |
| Surabaya | 4        | 3              |
| Tangerang | 21      | 18             |
| Owner    | 3        | 3              |
| Position |          |                |
| Manager  | 51       | 43             |
| SPV      | 38       | 32             |
| Staff    | 15       | 13             |
| < 100kg  | 4        | 3              |
| 100-250Kg | 47      | 39             |
| 250-500Kg | 37      | 31             |
| >500Kg   | 47       | 39             |
| Cost     |          |                |
| (in thousand Rupiah) |     |                |
| 10.000-100.000 | 42  | 35             |
| > 500.000 | 43      | 36             |
| 1-4      | 41       | 34             |
| Vendor Options (Competitors) |        |                |
| 5-7      | 58       | 48             |
| 8-9      | 4        | 3              |
| >10      | 17       | 14             |
| By Request | 49      | 41             |
| Order    |          |                |
| Daily    | 44       | 37             |
| Weekly   | 25       | 21             |
| Mountly  | 2        | 2              |
| 1-5      | 6        | 5              |
| 6-10     | 45       | 38             |
| Banyak Kiriman dalam Sebulan |       |                |
| 11-15    | 25       | 21             |
| >16      | 44       | 37             |

Based on Table 5, information is obtained that there are several indicators in each
variable that do not match the criteria that have been determined (output> 0.5). The physical
evidence variable is known to consist of 8 indicators. There are only 3 indicators that are
valid so that the other 5 indicators are deleted. The 5 indicators are BF1, BF2, BF3, BF4 and
BF6. Variables of physical evidence are known to consist of 7 indicators. Only 5 indicators
are valid so that the other 2 indicators are deleted. The 2 indicators are DT1 and DT2. the
price variable is known to consist of 4 indicators. All indicators of the price variable are all
declared valid. Intimate variable is known to consist of 8 indicators. All indicators of intimacy
variables are all declared valid. The Variable Guarantee variable consists of 5 indicators. 4 of
the 5 indicators are declared valid while one indicator is issued, namely JA1. And the
physical evidence variable is known to consist of 8 indicators. There are only 7 indicators that
are valid so that one other indicator is deleted. The indicators are KH7. The satisfaction
variable is known to consist of 3 indicators. All indicators of the overall satisfaction variable
are declared valid and the loyalty variable is known to consist of 5 indicators. All indicators of
the loyalty variable are all declared valid.
Validity and reliability testing of variables is an important thing that needs to be done to ensure the accuracy and reliability of the variables used in the research model. Average Variance Extracted (AVE) is used to determine variable validity, with a limit of > 0.5 (Hair et al. 2010). Composite reliability is used to determine the reliability of variables, with a limit of > 0.7 (Hair et al. 2010). The variable validity and reliability test is presented in Table 6.

| Indicator | Output | Information | Indicator | Output | Information |
|-----------|--------|-------------|-----------|--------|-------------|
| BF1       | -0.275 | Invalid     | IN1       | 0.716  | Valid       |
| BF2       | 0.393  | Invalid     | IN2       | 0.577  | Valid       |
| BF3       | 0.138  | Invalid     | IN3       | 0.525  | Valid       |
| BF4       | 0.412  | Invalid     | IN4       | 0.482  | Invalid     |
| BF5       | 0.530  | Valid       | IN5       | 0.645  | Valid       |
| BF6       | 0.343  | Invalid     | JA1       | 0.501  | Valid       |
| BF7       | 0.853  | Valid       | JA2       | 0.882  | Valid       |
| BF8       | 0.664  | Valid       | JA3       | 0.743  | Valid       |
| DT1       | 0.390  | Invalid     | KH1       | 0.523  | Valid       |
| DT2       | 0.467  | Invalid     | KH2       | 0.777  | Valid       |
| DT3       | 0.764  | Valid       | KH3       | 0.763  | Valid       |
| DT4       | 0.748  | Valid       | KH4       | 0.845  | Valid       |
| DT5       | 0.809  | Valid       | KH5       | 0.776  | Valid       |
| DT6       | 0.597  | Valid       | KH6       | 0.758  | Valid       |
| DT7       | 0.746  | Valid       | KH7       | 0.238  | Invalid     |
| H1        | 0.619  | Valid       | KH8       | 0.381  | Invalid     |
| H2        | 0.822  | Valid       | KP1       | 0.822  | Valid       |
| H3        | 0.556  | Valid       | KP2       | 0.853  | Valid       |
| H4        | 0.884  | Valid       | KP3       | 0.888  | Valid       |
| IN1       | 0.707  | Valid       | LY1       | 0.689  | Valid       |
| IN2       | 0.802  | Valid       | LY2       | 0.743  | Valid       |
| IN3       | 0.850  | Valid       | LY3       | 0.783  | Valid       |
| IN4       | 0.678  | Valid       | LY4       | 0.817  | Valid       |
| IN5       | 0.824  | Valid       | LY5       | 0.535  | Valid       |

Based on Table 6, it is known that all variables are all valid, which is indicated by the output value that has exceeded 0.5. In addition to the composite composite output also gives results above 0.7, which means that all variables are declared reliable.

RSquare which is a picture related to the description of a depicted model of its constituent variables (Sugiyono 2010). In this case there is no limit or value that describes a model well, the resulting RSquare value is presented in Table 7.

| Variable | R Square |
|----------|----------|
| Satisfaction | 0.935 |
| Loyalty    | 0.173    |

From Table 7, the satisfaction model of PT Bex's customers can be described as 93.5 percent of the variables in the model, while the remaining 6.5 percent is predicted by outside models. In the loyalty model it is known that only 17.3 percent can be depicted while the remaining 82.7 percent is predicted from outside the model.
Tested the relationship between variables used in the study. Besides testing is done to determine the significance of each hypothesis that is determined. The results of hypothesis testing are presented in Table 8.

Table 8 – Testing of Research Hypotheses

| Variable           | Estimate | T Stat | P Values | Information    |
|--------------------|----------|--------|----------|----------------|
| Physical Proof -> Satisfaction | -0.114   | 0.650  | 0.516    | Not significant|
| Response -> Satisfaction    | 0.082    | 1.967  | 0.050    | Significant    |
| Price -> Satisfaction     | 0.206    | 2.970  | 0.003    | Significant    |
| Intimacy -> Satisfaction  | 0.300    | 3.960  | 0.000    | Significant    |
| Guarantee -> Satisfaction | 0.025    | 0.143  | 0.886    | Not significant|
| Reliability -> Satisfaction| 0.448    | 5.419  | 0.000    | Significant    |
| Satisfaction -> Loyalty   | 0.416    | 6.701  | 0.000    | Significant    |

The relationship of physical evidence variables to satisfaction variables has insignificant results (0.650> 1956). This is because customers do not care about what belongs to PT Bex, such as having a warehouse, complete fleet, number of branches and channels. This is exemplified by companies in the same industry not having their own fleet but they still use their services. Slititonga (2010) explained that physical evidence only fits the description in the initial stages where as a form of perception that the company is able to provide good service.

The relationship of responsiveness variables to satisfaction variables has a positive (0.082) and significant (1.967> 1956). This is related to the company's performance in the eyes of customers. Exemplified through the return of receipts, the position of goods, claims in accordance with expectations, Where some customers require delivery order letters, receipts as proof that the goods have arrived and are needed for billing invoices from customers to their business partners. Responsiveness to claims is also very important considering the price of the goods sent is relatively expensive and requires special handling. Yuniarti (2014) explains that the responsiveness of employees is an important part of increasing customer satisfaction because customers basically expect attention from the company they trust.

The relationship of the price variable to the satisfaction variable has a positive (0.206) and significant (2.970> 1956). Price is an important instrument to attract customers and make customers satisfied. Customers will be satisfied if shipping costs can compete with better service quality and benefits. On the other hand, PT Bex needs to know the budget for the range of product delivery from each customer.

The relationship of intimacy variables to satisfaction variables has a positive (0.300) and significant (3.960> 1956). This can be seen from the closeness so that it builds a sense of reluctance to customers so that it can cover up dissatisfaction with the services of PT BEX. Intimacy is also very useful when getting a shipping project where PT BEX employees get the price offered by competitors so PT BEX can secure the competitor's shipping price.

The relationship of the guarantee variable to the satisfaction variable has a non-significant result (0.143> 1956). The guarantee role is proven in the shipping process, this can be seen from the PIC of the driver and driver accompanying the customer's goods. In a study by Bakrie (2010), it was explained that the customers did not terminate the guarantee if the company could prove through the agreement and the ability (professionalism) to the customer.

The relationship of the reliability variable to the satisfaction variable has a positive (0.448) and significant (5.419> 1956). Reliability is very influential considering the target market is handling specialist items which require special handling and relatively fast time. The re-checking of shipments in the warehouse to penalize missrays is PT BEX's own points because of the large number of items sent by customers and allows them to be exchanged with other customers because the items sent by the items are the same between customers. In Mosahab's research (2010), it was explained that employee reliability had an important role in increasing employees due to the reliability associated with the company's ability to operate.
The relationship of satisfaction variables to loyalty variables has a positive (0.416) and significant (6.701> 1956). This explains that PT Bex is able to provide satisfaction to customers with a series of activities. On the other hand loyalty from customers has begun to take shape as consumers have been satisfied. Kusumawati (2015) explained that customer satisfaction can encourage customers to be loyal to company services, the benefits of this can be useful as a free promotional machine due to the effects of recommendations.

MANAGERIAL IMPLICATIONS

There are several managerial implications in this study. Companies that carry out cargo business operations get some important recommendations for the company. The company should make an automatic notification application about the position of the company, this is to increase customer confidence in the products entrusted to the company. Implementing an SOP for services in a single service increases responsiveness with a time limit not exceeding 10 minutes, with the time limit it is expected that the company's performance to serve customers becomes better. The company needs to formulate a new price by integrating with similar companies, this is considered an accurate step in order to reduce the company's costs. Companies can approach important stakeholders to ensure that companies are chosen.

CONCLUSION AND SUGGESTIONS

In this study, several conclusions related to the formulation of the problem that have been determined: (1) prove that physical and collateral are not related to customer satisfaction. Whereas price, responsiveness, reliability, intimacy have a significant influence on customer satisfaction, (2) The relationship of customer satisfaction is recognized as having a positive and significant influence on customer loyalty. Although most research models exist, (3) Companies find satisfaction providing a large part of loyalty. So from that the company needs to maintain customer loyalty by optimizing all factors that have a significant influence.

Suggestions in this study need several important things, including: (1) now companies need to focus on the business to business model. This relates to the characteristics recorded at this time describing the model; (2) companies also need to consider startup businesses that have a large relationship with product delivery. This can be used as a potential in increasing company sales; (3) further research can evaluate the expansion of the retail market segment or B to B with an increase of 40-50% in 2019.

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ABSTRACT
The development of tourism sector starts by identifying the tourism potential and need assessment. This research aims at describing the tourism performance, mapping tourism potential and identifying need assessment of the tourism objects in Mangunan village, Bantul, Yogyakarta. The data were obtained using survey method and questionnaire as well as Focus Group Discussion. The analysis conducted is descriptive statistics analysis. The research results show that there are 3 tourism villages and 10 tourism objects. The results of the need assessment show that most of the tourism objects need to improve the quality and the number of creative and innovative photo spots, empower the society for the photography business, build fruit stalls and organize the treatment systems for the fruits, train the customer service and conduct occupational health and safety training, motivate the young generations, improve housekeeping, innovate the culinary products, and conduct waste management.

KEY WORDS
Tourism potential, mapping, need assessment, public service.

Mangunan tourism is located in Dlingo district in Bantul, Indonesia. It is famous for its unique attractions such as pine trees, waterfall, cave, and breathtaking view from the top of the hill. The tourism development program is supported by the government by establishing Kelompok Sadar Wisata (Tourism Awareness Group) that cooperates with industries or private businesses to conduct and support the tourism development. The development of the sustainable tourism can be seen from the three significant aspects, which are environment, social, and economy aspects (Fennell, 2003; Baker, 2006; Mowforth & Munt, 2007; Risteski et al., 2012; Sesotyaningsih & Manaf, 2015).

Therefore, tourism development needs to pay attention to the position, potential, and the roles of the society both as subject or actor and as the ones taking the benefits from the development. The support from the society also determines the success of the tourism development. Society with high empowerment is the society that is physically and mentally healthy, educated and strong, and having intrinsic values that serve as the source of the empowerment, such as togetherness and cooperation (Zubaidi, 2013).

The unique and attractive tourism potential needs to have the right tourism development so that it can attract a large number of tourists. Therefore, there is a need to conduct tourism mapping for each region in Mangunan village since this village has numerous tourism potentials to offer. The goal of the tourism mapping is to clearly identify the types and the potentials of the nature tourisms whether they are in the developing or in the under-developed stages. The tourism mapping will determine the locations of the tourism spots so that the local and international tourists can choose the tourism spots that they want to visit. Besides, the development of the tourism potential will increase the income of the society.
A research conducted by Kussujaniatun 2017 about Bojonegoro shows that there is a need to conduct tourism development of the teak crafts, batik, culture tourism, tourism village, and farm that serve as tourism attractions in Bojonegoro. Furthermore, tourism mapping also provides excellent opportunities to increase foreign exchange, so that the research about tourism mapping in Mangunan village is necessary to conduct.

MATERIALS AND METHODS OF RESEARCH

According to Pendit (2003) tourism potentials are numerous resources in a certain area that can be developed as tourist attraction that eventually can improve the financial and other aspects.

Mariotti (Bayu, 2011) adds that tourism potential is the attractions so that people would like to come to visit the places. Besides, Sukardi in Bayu (2011) also argues that there is a need to develop the tourism industry. Based on Obioma (2013), the types of tourism potentials are:

- Nature tourism potential is everything related to beautiful nature such as cave, highland, mountain, waterfall, rocks, wild animals, water sources, and so on;
- Culture tourism potential is everything related to culture and the unique of the people, both artificial and heritage such as dance, music, tradition, historical monument, pictures, arts, crafts, festivals, weddings, and so on;
- Artificial tourism is based on the man-made technology and innovation in entertainment aspect (cinema, theater, museum, park), sports and recreation (swimming pool, sport clubs, social club), accommodation (hotel, guest house), restaurants, hotel and transportation facilities such as travel agent, tour operator and tourism information center, and so on.

The main techniques used in this research are observation, open in-depth interviews with the local community (Kussujaniatun, 2017), literature study and survey. Data gathering involves the community on the tourism activities, the benefits from the tourism village development (Sesotyaningsih & Manaf 2015).

The data were obtained using questionnaires and Focus Group Discussion and analyzed using descriptive statistics analysis. The research results show that there are 3 tourism villages and 10 tourism objects. The mapping method as used by Vitasurya (2015) emphasizes the involvement from the target as active subjects, make use their experience as integral part in the research, identify the problem, and solve the problem with the target of empowerment of the research subjects.

RESULTS OF STUDY

The result is the tourism mapping. It is obtained by conducting data observation from the government and existing community, interviews with the tourism village managers, tourism awareness group, and observation on the right mapping needs.

Tourism sector development is one of the efforts to improve local income. There are various tourism objects in Mangunan with the mapping as follows.

The characteristics of tourism village are the original and pure resources, the unique of the village and its traditions and culture of the local community. Tourism village provides new alternative for the tourists not only to enjoy the beautiful view but also to learn and to introduce the village life of the community.

Bantul has 27 developed tourism villages, and 3 of them are in Mangunan, namely Tapak Tilas Sultan Agung (developing), Songgo Langit (developing), and Kaki Langit which most of its residents are wood craftsmen. There are various crafts that serve as souvenirs made of wood such as table, chairs, picture frames, and many more.

On weekend, the location around Mangunan Spring serves as Art Market of Kaki Langit. This market is attractive since we can find numerous village culinary items that are rarely found such as thiwul, gudeg manggar, kelanan, brongkos, wedang uwuh, and many
more. All of the sellers in the market wear Java traditional costume. The unique thing is about the payment method. Before we enter the market we have to exchange our money to coins made of wood. The coins are then used as payment tools to shop in Art Market.

There are several homestays in Kaki Langit tourism village for the tourists if they would like to stay and spend more time to see the life of the society. These homestays are managed directly by the local people in the village. There are 8 activities that tourists can do in this village, namely Atap Langit, Langit Cerdas, Langit Ilalang, Langit Terjal, Langit Hijau, Budaya Langit, Karya Langit, and Rasa Langit.

All of the activities offer live in-based activities along with the homestays in which the tourists can get experience of living together with the host or the owner of the house, outbound, and get farming method education. Visitors can also enjoy the local food such as gathot and tiwul ayu and typical drink of Mangunan village. They can also visit wood crafts home-based industries and bamboo plaits, enjoy the traditional art performance of the village like gejlok lesung, kethoprak wayang, and many more.

Mangunan Pine Forest is one of the Forest Management Resorts in Mangunan. The open area with tall trees will become an interesting attraction for the tourists. The distance from the city of Yogyakarta is around 23 km and the forest can be reached for about 60 minutes by cars or motorcycles. The entrance ticket is Rp. 2500 and the parking fee is Rp.3000 for the motorcycles and Rp. 10.000 for cars. The facilities offered include viewpoints to enjoy the beautiful view, outbound areas, musholla, toilets, and parking lots.

This tourism object is one of the nature resorts with natural panorama with similar concept as in Pine Forest. This tourism object is an educational tourism with the concept of fairytale that offers numerous attractions such as hobbits photo spots, wood bridge that connect trees, viewpoints, treehouse, and many others. Besides, there is also Flying Fox area. The entrance ticket is Rp. 2000. The further development plan of the tourism is to build a theatre that serves as a spot for story telling or drama performance to spread kindness. It is expected that the visitors can get the moral message.

Panguk Kediwung Hill was opened for public in the middle of 2016 by the local people. Panguk Kediwung Hill offers the beauty of sunrise above the clouds. The best panorama in Panguk Kediwung Hill is the sunrise and mist that shapes like clouds. This situation makes the tourists feel like having sunrise in the land above the clouds. There are more than five photo spots, and visitors need to pay after taking pictures in some of the spots. The retribution for the tourism object is Rp.2000 for motorcycles and Rp. 5000 for cars. The facilities provided in this object are toilets, parking lots, and some places to eat.

Mojo Hill is located in Gumelem, Mangunan, Dlingo, Bantul. The interesting thing in Mojo Gumelem Hill is the photo spot of a huge bird nest above the hill. This becomes the most favorite spot for the tourists. There are 3 viewpoints around the tourism object of Mojo Hill that can be used as photo spots and to enjoy the beautiful views. The tourists can pay the entrance ticket and parking lot fee as they like.

The local people started to manage Watu Goyang tourism object in the middle of 2016. The main advantage of Watu Goyang is that we can enjoy the view around Imogiri. The top of the cemetery or the burial ground of the kings of Imogiri can be seen from Watu Goyang. The most interesting thing is of course the view of the sunset since the peak of Watu Goyang hill faces to the west. The entrance ticket is still free since there are still few facilities and the object is still new. However, the facilities are sufficient, such as gazebos, public toilets, musholla, places to eat, and some spacious parking lots.

Mangunan Fruit Garden is located in Mangunan village, Dlingo district, Bantul, Yogyakarta, 15 km from the Bantul city center and 35 km from Yogyakarta city center. Mangunan Fruit Garden is built on 23,3415 ha land with the height of 150 mdpl – 200 mdpl. Besides its breathtaking view and fresh air, Mangunan Fruit Garden is also called the land above the clouds. Tourists can enjoy various fruits arranged beautifully according to the slope of the land such as durian, mangosteen, dukuh, rose apple, oranges, mangos, rambutan, and many more. It also has complete facilities such as outbound area, flying fox, bridges, camp ground, accommodation area, meeting rooms, toilets, musholla, and so on.
Watu Lawang is located on the west side of Mangunan Fruit Garden. Watu Lawang is very famous for its farm view that is located on Kedungmiri village and bridge in Imogiri. Watu Lawang’s name is taken from Javanese word of Lawang which means door. This is due to the top of the hill that splits and looks like a door. For the parking fee, it takes Rp. 2000 for motorcycle and Rp. 5000 for cars.

The uniqueness of Gajah Cave in Mangunan is the entrance of the cave. The shape of the cave mouth is horizontal but the exit is vertical with a huge tree from underground reaching to the cave exit. Gajah cave is a horizontal cave with the depth of 200 meters. The cave is still natural with its stalactite and stalagmite along the cave. Gajah cave is still not managed seriously. Only local people who keep the cave well.

Tembelan Cliff is still a new tourism spot in Yogyakarta. Tourists usually come to take selfies and take sunrise or sunset pictures. Compared to Panguk Hill and Mojo Hill, Tembelan Cliff has more advantage in its viewpoint or Gardu Pandang with the shape of a vessel. It also has sufficient facilities such as some viewpoints, toilets, parking lots, and gazebos.

Table 1 – Tourism Objects Description

| No | Tourism Objects                  | Visitors |
|----|----------------------------------|----------|
| 1  | Asri Pine Forest                | 63,600   |
| 2  | Mangunan Fruit Garden           | 36,300   |
| 3  | Seribu Batu Songgo Langit       | 32,481   |
| 4  | Panguk Hill                     | 7,082    |
| 5  | Mojo Hill                       | 937      |
| 6  | Gajah Cave                      | 347      |
| 7  | Watu Goyang                     | 7,656    |
| 8  | Watu Lawang                     | 2,481    |
| 9  | Tembelan Cliff                  | 3,453    |
| 10 | Mangunan Spring Kaki Langit     | 80       |

Table 2 – The Number of Visitors in Nature Tourism Objects in Mangunan Village

| No | Facilities | Number     |
|----|------------|------------|
| 1  | Home Stay  | 673 (rooms)|
| 2  | Jeep       | 487 (trips)|

Based on the data of the number of the visitors in Mangunan Village, it shows that there are several potentials such as Asri Pine Forest, Seribu Batu, Panguk Hill, Mojo Hill, Watu Goyang, Mangunan Fruit Garden, Watu Lawang, Gajah Cave, and Tembelan Cliff with their own potentials and attractions. Out of the 9 tourism objects in Mangunan Village, most of the visitors come to Asri Pine Forest with 190,800 visitors each month, while the lowest number of the visitors is in Gajah Cave with 1,041 visitors each month. The number of the visitors’ arrival depends on the accessibility, facilities, and attractions of the tourism objects.

Generally, the problems faced in tourism development are (1) Lack of competent human resources. As a result, there is a lack of sense of belonging of the tourism object and there is a gap between the tourism manager and the actual actors in the field. (2) Insufficient infrastructure and facilities in numerous tourism objects. (4) Lack of promotion of some tourism objects so that the visitors do not know about their potentials and eventually the visitor only come to Pine Forest and Mangunan Fruit Garden. (4) Lack of government’s realization to conduct tourism development so that the tourism is still in terms of plan. (5) Lack of involvement of the tourism industries such as travel agents, accommodation, and so on. The cooperation is needed since it is expected that it can improve the tourism so that the tourism can give more strength in this globalization era. The role of the tourism department is crucial related to the promotion of the tourism in Mangunan Village in Dlingo district to the tourism industries.

The result of the Focus Group Discussion with the head of head of the tourism village manager and its team shows some information related to things need to do in each tourism
potential in Mangunan Village to increase the number of the visitors. The information is shown in the following table:

Table 3 – Industry Type Description

| No | Industry Type           | Need Assessment                                                                 |
|----|-------------------------|----------------------------------------------------------------------------------|
| 1  | Asri Pine Forest        | Add attractive and creative selfie spots                                         |
|    |                         | Improve photo spots’ quality to be more innovative and creative                  |
|    |                         | Empower the society to conduct photography business                              |
| 2  | Seribu Batu             | Improve photo spots’ quality to be more innovative and creative                  |
|    |                         | Empower the society to conduct photography business                              |
| 3  | Panguk Hill             | Improve photo spots’ quality to be more innovative and creative                  |
|    |                         | Empower the society to conduct photography business                              |
|    |                         | Improve photo spots’ security                                                   |
| 4  | Mangunan Fruit Garden   | Provide fruit stalls and souvenirs                                               |
|    |                         | Empower the society to conduct photography business                              |
|    |                         | Organize fruit treatment system                                                 |
| 5  | Watu Lawang             | Improve photo spots’ quality to be more innovative and creative                  |
|    |                         | Empower the society to conduct photography business                              |
|    |                         | Improve photo spots’ security                                                   |
| 6  | Gajah Cave              | Add attractive and creative selfie spots                                         |
|    |                         | Empower the society to conduct photography business                              |
|    |                         | Improve photo spots’ security                                                   |
| 7  | Tembelan Cliff          | Add attractive and creative selfie spots                                         |
|    |                         | Empower the society to conduct photography business                              |
|    |                         | Improve photo spots’ security                                                   |
| 8  | Mangunan Spring         | Improve photo spots’ quality to be more innovative and creative                  |
|    |                         | Empower the society to conduct photography business                              |
|    |                         | Add attractive and creative selfie spots                                         |
| 9  | Mojo Hill               | Improve photo spots’ quality to be more innovative and creative                  |
|    |                         | Empower the society to conduct photography business                              |
|    |                         | Add attractive and creative selfie spots                                         |
|    |                         | Improve photo spots’ security                                                   |
| 10 | Watu Goyang             | Add attractive and creative selfie spots                                         |
|    |                         | Empower the society to conduct photography business                              |
|    |                         | Improve photo spots’ quality to be more innovative and creative                  |
| 11 | Tourism Village         | Customer service training                                                        |
|    |                         | Motivation training for young generation                                         |
|    |                         | Occupational Health and Safety training                                          |
|    |                         | Housekeeping training                                                            |
|    |                         | Culinary product differentiation training                                         |
|    |                         | Waste management training                                                       |

CONCLUSION

There are 3 potentials for tourism development, namely Tapak Tilas Sultan Agung, Songgo Langit, and Kaki Langit. Kaki Langit is one of the famous tourism villages. The majority of the residents work as wood craftsmen. There are some homestays managed by the residents. This village offers 8 activities for the tourists. On Saturday and Sunday, there is Kaki Langit Art Market in around Mangunan Spring. It shows that Kaki Langit has numerous potentials.

There are 10 tourism objects offered by Mangunan Village such as Asri Pine Forest, Mangunan Fruit Garden, Seribu Batu Songgo Langit, Panguk Hill, Watu Lawang, Gajah Cave, Tembelan Cliff, Watu Goyang, Mojo Hill, Mangunan Spring with their own potentials and attractions. The total of the visitors in those objects reaches 463,251 visitors. Most of the visitors are in Asri Pine Forest of 190,800. Asri Pine Forest offers an open area with its tall trees and special selfie spots such as a small theatre, bridge, and hammocks.

Meanwhile, tourism object with the lowest number of visitors is in Mangunan Spring with 240 visitors. Even though Mangunan Spring has its own attractions like spring from Wali
Songo time and Art Market, those objects still do not attract a large number of visitors. This is due to the poor facilities in the tourism objects.

Related to the potentials of the tourism villages and the tourism objects, it can be stated that the performance of most of the tourism objects in Mangunan Village is good enough and still needs to be improved. To improve the performance, there is a need to conduct guidance, supervision, and training. The tourism objects need to conduct several things such as improving the security, improving the quality of the creative and innovative selfie spots, adding interesting and creative selfie spots, providing fruit stalls and souvenirs, organizing fruit treatment system, empowering the society to do photography business, conducting customer service training and Occupational Health and Safety training, and many more.

By conducting those strategies, it is expected that the performance of the tourism development will improve and eventually will improve the welfare of the society. Based on the result of the need assessment, each industry needs to follow up the result in the form of research and community service. If the need assessment is fulfilled, the work capacity of each industry will improve and eventually will improve the income of the industries in Mangunan Village.

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CITRONELLA AGROFORESTRY IN GAYO LUES REGENCY OF INDONESIA

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ABSTRACT
An agroforestry practice system has been applied by Gayo Lues community in managing their agricultural land. The most dominant tree species treated by farmers among the citronella plants is pine. The population in this study was 2,403 farmers. From the total population, samples were taken by using Slovin formula so that the sample became 96 farmers. The agroforestry system in Gayo Lues Regency uses a blend of pine trees (woody plants) with citronella plants (non-woody plants). The optimal area of citronella agroforestry for farmers is 1.3 ha. They have fulfilled the needs of a decent living in this area.

KEY WORDS
Agroforestry, optimal land area, population, trees.

Agroforestry is a land management system which is a combination of agricultural production, including fruit trees and livestock of forest plants. Hairiah, et al. (2004) explained that the agroforestry system is a dynamic and ecological system based on natural resource management. It is combining various types of trees on a partition of agricultural land and landscaping. Land management with an agroforestry system aims to maintain the amount and diversity of land production so that it has the potential to provide social, economic and environmental benefits for the land users.

The land area of citronella in Gayo Lues is currently about 17,358 hectares. It is spread in 10 sub-districts in Gayo Lues regency. Farming citronella is the main job for some farmers in Gayo Lues, therefore working on the land with the agroforestry system optimally will increase the income of citronella farmers in Gaoyo Lues.

The agroforestry systems practice has been implemented by Gayo Lues community managing their agriculture land. The main job of Gayo Lues community is farming. The most commodity widely planted by the farmers which is also encouraged by the government to be planted in Gayo Lues is citronella. citronella is usually planted by the farmers combined with the various other types of plants, both kind of trees such as pine, coffee or other agricultural crops. The most dominant tree species which is cultivated by the farmers among citronella plants is pine. It is considering that pine has been tapped by the farmers for their sap.

In order to preserve the forests and optimize the land, the most appropriate solution to be applied in Gayo Lues is agroforestry planting pattern. It is a system combining high-economic tree crops such as coffee, cocoa, and pine with another plantation crop, citronella. In terms of the land area and soil structure, it is very supportive to implement the agroforestry activities with a pattern of pine-citronella in Gayo Lues.

The aim of this study:
- To find out the general view of agroforestry in Gayo Lues regency;
- To find out what is the optimal land area for citronella farmers in Gayo Lues.

METHODS OF RESEARCH
This research was conducted in Gayo Lues. A determination of the location for this study was done purposively by the consideration that Gayo Lues is one of a good place to be used as agroforestry farming. The object of this study is the farmers' agroforestry in Gayo Lues. It was chosen as many as 3 sub-districts in a regency. The selection based on the subdistrict which has a dominant area of citronella and pine plants.
There are two kinds of data in this study, called primary and secondary data. Primary data is obtained by direct observation of the research location and conducting a direct interview with some respondents. The interview was done by using a list of questions which have been prepared in accordance with the research objectives. Secondary data is needed to support the primary data obtained from the library studies, related institutions or agencies.

The population in this study were all citronella agroforestry farmers from 3 districts area of Gayo Lues which consist of 2,403 farmers. This study uses a quantitative approach with a survey method. A determination of samples is done by Simple Random Sampling so the samples can represent them. From the total population, samples were taken by using Slovin formula with a degree of error is 10 percent then obtained 96 farmers who became the samples of the study. Furthermore, this study in sampling was conducted using a random method (simple random sampling).

The analytical method which is used in this study is descriptive, where the data are obtained from the interviews and also filled out the questionnaires from the field which were discussed, analyzed, processed, tabulated into some table-line forms that appropriate with the testing analysis. Marlina and Clara (2009), mentioned that a descriptive analysis method is a method which is used to analyze and process the available data so the clear facts and the relationship among the phenomena are obtained.

Descriptive analysis is a research analysis which is used to describe the problems which occur in the present or ongoing. It aims to describe what happened when the research was done (Nana Sudjana and Ibrahim 1989).

The analysis is done by taking the steps of the similitude, classifying, and analyzing or processing the data, making a conclusion and report. It aims to make a description of a situation in a description objectively.

The optimum area of citronella agroforestry in this study was determined through an approach. The amount of net income which must be obtained by the farmers for their decent living needs is equivalent to the provincial minimum salary. The estimation of the optimal land area needs for citronella agroforestry is calculated by Monde formula (2008):

\[
LO = \frac{UMP}{RP} \times RLL \quad (\text{Monde, 2008})
\]

Where: \( LO \) = Optimal Land Area (Ha); \( UMP \) = Provincial Minimum Salary (Rp); \( RP \) = The average of farmers’ income/month (Rp); \( RLL \) = The average of Land Area (Ha).

**RESULTS AND DISCUSSION**

In general, a land which is cultivated by the respondents in the research area is private property that is managed simply. It is a land that has been legitimately owned by someone who is responsible for managing it to be obtained its benefits. Through its origin, land can be divided into two types, namely a private property from the family inheritance and private property from anybody else.

On average, from the results of the interview, the respondents have their own private property from the family inheritance. In managing agroforestry citronella gardens, the farmers use more experience which is gained from their parents as well as the results of exchanges among the farmers. Garden management is divided into several activities such as land preparation, seed preparation, planting, maintenance, harvesting, and marketing.

Citronella agroforestry in one field has been applied by the farmers in Gayo Lues to increase their income. However, the use of pine plants is still not optimal because the farmers are more focused on caring for citronella plants than pine. It is because citronella price is higher than pine plants.

The farmers can harvest citronella plants up to 3 times a year but on average the farmers still harvest them twice a year. It is because citronella plants are not the only farming business for the farmers. As a result, the farmers do not be too focused on developing citronella cultivation.
At the time of the research, citronella price is 250,000 per kilogram while the pine price was 4,000 per kilogram. The additional income from pine sales is already helping the farmers’ income in the research area.

Samples of the farmers in this study are characterized by the level of education and farming experience. The importance of a discussion about the farmer characteristics will influence the farmers’ activities, skills, and abilities in combining the use of production factors. It also influences the farmers in making decisions for farming and implementing the new technologies.

The average education level of the sample farmers in the research area is 9 years or at the level of Junior High School (SMP). It will affect on the level of developing technology adoption and innovation. In general, higher education level so can make the process of technology adoption becomes faster. The purpose of technology and innovation is to improve the process of farming activities both in terms of planting or production. The higher the farmer education, the easier for them to adopt the technology which is obtained from the agricultural workers.

The average farming experience of the sample farmers is about 2.6 years. This situation shows that the sample farmers are still less of experiences in managing their farming. Their experience in carrying out farming is one of the factors that can influence their success.

The longer the farmers work on these activities, the more experience they will gain. It is expected to be more mastered and skilled in cultivation techniques, post-harvest technology and mastery of other technologies which relates to the farming. The farmers who have long experiences in farming will be better and more mature in terms of farming planning. It is because they understand more about the various technical aspects of farming. Likewise with
the various non-technical problems that are usually faced in farming so the productivity will be higher ultimately.

The land referred to this study is the area cultivated by the farmers for citronella agroforestry in Gayo Lues. It is an important factor that can affect the amount of production and the level of farmers’ income. Hernanto (1989) stated that a land area is divided into three groups: Large group (> 2 Ha); Medium group (0.5 - 2 Ha); Narrow group (<0.5 Ha).

The average land area which is cultivated by the farmers for citronella agroforestry farming in the research area is 1.5 ha. Through the average, it can be concluded that the land which is cultivated by the farmers is included in the medium land group.

The factor of workers’ productivity is very important in supporting the success in farming. The workers who are taken into the farming activities are who work in the clearing, planting, fertilizing, weeding and harvesting process. The farmers provide the salary for the workers both women and men in the amount of Rp. 80,000 person / day.

Table 2 – The Average of Workers Employed on Citronella Agroforestry Farmers in Gayo Lues, 2018

| No | Activities      | Total workers Employed HOK / Ha |
|----|----------------|----------------------------------|
| 1  | Cleansing      | 7                                |
| 2  | Planting       | 15                               |
| 3  | Fertilizing    | 5                                |
| 4  | Weeding        | 4                                |
| 5  | Harvesting     | 4                                |
|    | Total          | 35                               |

Source: Primary data (processed), 2018.

The average workers’ productivity in citronella agroforestry in Gayo Lues is equal to 35 HOK / Ha. Planting activity require the most workers, which is 15 HOK / Ha and the activity that require the least workers is harvesting and weeding of 4 HOK / Ha. It is because the weeding process uses Pesticides by using sprayers to clean weeds that interfere with the plant growth. Therefore, the weeding process does not need a lot of workers.

The cost concept which is used in this analysis is the cost of production facilities and workers. The success of a farm is very determined by the use of production facilities such as seeds, pesticides, urea fertilizer, and firewood. The lack of proper use of these production facilities will make a big impact, such as low production and high costs of farming production.

Table 3 – The Average Use of the Production Facilities on Citronella Agroforestry Farmers in Gayo Lues, 2018

| No | Production Equipment | Volume | Unit     | Price/Ha (Rp) |
|----|----------------------|--------|----------|---------------|
| 1  | Seed                 | 7.83   | Sack/Ha  | 1,566,666     |
| 2  | Pesticide            | 15.5   | Liter/Ha | 279,000       |
| 3  | Urea fertilizer      | 155    | Kilogram/Ha | 387,500     |
| 4  | Firewood             | 6.2    | Pickups/Ha | 3,104,166   |
|    | Total                |        |          | 5,337,332     |

Source: Primary Data (processed), 2018.

It can be seen that the use of average production facilities per Ha for seeds are 7.83 Sacks / Ha with the number of costs are Rp. 1,566,666 per Ha. For the pesticides are 15.5 Lt/Ha with the number of costs are Rp. 279,000. Urea fertilizers as much as 155 Kg/Ha with the amount of the costs spent in Rp. 387,500. Firewoods are 6.2 cars/ha with the amount of the costs are Rp. 3,104,166. The use of average production facilities which are used in the research area is Rp. 5,337,332 per Ha, for more details.

The average cost of citronella agroforestry equipment in Gayo Lues is Rp. 2,652,916 per Ha.

The number of depreciation costs average for equipment in citronella agroforestry in Gayo Lues is Rp. 530,583 per Ha.
Workers are one of the factors in production which significantly influence the activities of citronella agroforestry. Workers need to be taken into the production process in an effective number and not only seen in terms of the availability of workers but also their quality. The workers’ salary which is applied during the research is Rp. 80,000 HOK / day.

Table 4 – The Average Use of Equipment Costs in Citronella Agroforestry in Gayo Lues, 2018

| No | Production Equipment       | Volume | Price (Rp) |
|----|---------------------------|--------|------------|
| 1  | Hoes                      | 3      | 249,166    |
| 2  | Machetes                  | 3      | 128,750    |
| 3  | Sprayers                  | 3      | 775,000    |
| 4  | Distillation Boilers       | 1      | 1,500,000  |
|    | Total                     |        | 2,652,916  |

Source: Primary Data (processed), 2018.

Table 5 – The Average Cost of Depreciation of Equipment in Citronella Agroforestry in Gayo Lues, 2018

| No | Production Equipment       | Volume | Depreciation Price (Rp) |
|----|---------------------------|--------|-------------------------|
| 1  | Hoes                      | 3      | 49,833                  |
| 2  | Machetes                  | 3      | 25,750                  |
| 3  | Sprayers                  | 3      | 155,000                 |
| 4  | Distillation Boilers       | 1      | 300,000                 |
|    | Total                     |        | 530,583                 |

Source: Primary Data (processed), 2018.

Table 6 – The Average Cost of Workers in Citronella Agroforestry in Gayo Lues, 2018

| No | Activities     | Salary (Rp/person) | HOK | Total (Rp) |
|----|----------------|--------------------|-----|------------|
| 1  | Cleansing      | 80.000             | 7   | 560.000    |
| 2  | Planting       | 80.000             | 15  | 1,200.000  |
| 3  | Fertilizing    | 80.000             | 5   | 400.000    |
| 4  | Weeding        | 80.000             | 4   | 320.000    |
| 5  | Harvesting     | 80.000             | 4   | 320.000    |
|    | Total          |                    | 35  | 2,800.000  |

Source: Primary Data (processed), 2018.

The maximum workers at the time of planting are 15 HOK / Ha with the costs are Rp. 1,200,000 and the minimum workers when harvesting and weeding is 4 HOK / Ha with the costs are of Rp. 320,000. It is because in harvesting and process, the amount of workers which are needed by farmers is less than the other activities. The total workers’ cost which is used in citronella farming is Rp. 2,800,000 per Ha.

1) Total Production Costs

Table 7 – Production Costs average in Citronella Agroforestry in Gayo Lues, 2018

| No | Components     | Production price (Rp) |
|----|----------------|-----------------------|
| 1  | Production equipment | 5,337,332            |
| 2  | Workers         | 2,800,000             |
| 3  | Equipment costs | 2,652,916             |
| 4  | Equipment depreciation | 530,583         |
|    | Total           | 11,320,831            |

The cost of citronella agroforestry generally consists of the cost of procuring production facilities which is Rp. 5,337,332 / Ha, to pay the workers’ salary are Rp. 2,800,000 / ha and depreciation of equipment is Rp. 530,583 / Ha. Total cost which is incurred by the farmers per harvest season is Rp. 8,667,915 / Ha.
The production value is gross revenue received from the average production per harvest season. It is multiplied with the average selling price. The size of the production value which is obtained by the farmers highly depends on the high and low selling prices and production.

Table 8 – The Average Production and Production Value of Citronella in Gayo Lues, 2018

| No | Components       | Unit  | Total     |
|----|------------------|-------|-----------|
| 1  | Production       | Kg    | 121       |
| 2  | Selling cost     | Rp/Kg | 250.000   |
| 3  | Production value | Rp    | 30,250.000|

Source: Primary Data (processed), 2018.

The average number of production per harvest season which is obtained by the farmers is 121 Kg with the production value is Rp. 30,250.000 and the average selling price is Rp. 250.000.

Table 9 – The Average Production and Production Value of Pine in Gayo Lues, 2018

| No | Components   | Unit  | Total     |
|----|--------------|-------|-----------|
| 1  | Production   | Kg    | 62        |
| 2  | Selling cost | Rp/Kg | 4,000     |
| 3  | Production value | Rp | 248,000   |

Source: Primary Data (processed), 2018.

The number of average production per pine harvest season is 62 Kg with a production value is Rp. 240,000 and the selling price average is Rp. 4,000.

Table 10 – The Average of Total Production and Production Value of Citronella in Gayo Lues, 2018

| No | Plants  | Total     |
|----|---------|-----------|
| 1  | Citronella | 30,250.000|
| 2  | Pine    | 248,000   |

Source: Primary Data (processed), 2018.

Based on the data above, it shows that the average production per harvest of citronella and pine plants are Rp. 30,498,000.

Revenue is the amount of production value reduced by the production costs during the production process.

Table 11 – The Average Income of Citronella Agroforestry in Gayo Lues, 2018

| No | Components   | Unit | Total    |
|----|--------------|------|----------|
| 1  | Production value | Rp  | 30,498,000|
| 2  | Production costs | Rp  | 11,320,831|
| 3  | Income       | Rp   | 19,177,169|

Source: Primary Data (processed), 2018.

The average income of citronella agroforestry in the research area is Rp. 19,177,169 per farmer and per harvest season with the land average area is 1.5 ha. This is the net income which is received by the farmer after deducting all of the production costs during the process.

Land is an essential productive asset of farming. To fill the farmers’ living needs, an optimal land area is needed. The estimation of the optimal land area requirement for citronella agroforestry is calculated by the Monde formula (2008):

\[
LO = \frac{UMP}{RP} \times RLL = \frac{Rp.2,700,000 \times 1.5 (Ha)}{Rp.3,196.194} (Monde, 2008)
\]
From the calculation above, the optimal land area for farmers in the research area is 1.3 hectares. Through this condition, the farmers have reached a normal income level and provincial minimum salary.

CONCLUSION

Based on the results and discussions, there are some conclusions which can be taken as follows:
- The agroforestry system in Gayo Lues uses a combination of pine trees (woody plants) with citronella plants (non-woody plants);
- The optimal area of citronella agroforestry for the farmers is 1.3 ha. Thorough the area, the farmers have fulfilled their living needs.

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CONSERVATION POLICY OF LIVING NATURAL RESOURCES AND THEIR ECOSYSTEMS: A STUDY OF THE IMPLEMENTATION OF REGIONAL REGULATION OF MALINAU REGENCY NUMBER 4 OF 2007 CONCERNING MALINAU REGENCY AS A CONSERVATION REGENCY

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ABSTRACT
In accordance with Law Number 47 of 1999 concerning The Establishment of Nunukan Regency, Malinau Regency, West Kutai Regency, East Kutai Regency and Bontang City, the area of Malinau regency is approximately 42,620.70 km², where 90% of them is forest cover. This number shows that Malinau regency has a vast area of forest cover which also being the largest in Indonesia. In order to safeguard and protect the preservation of vast areas of virgin forest as well as its diverse and unique biodiversity so that it can fulfill its purposes as the absorber of carbon dioxide (CO2) emissions and producer of oxygen (O2), the Malinau regency government immediately issued Regional Regulation Number 4 concerning Malinau Regency as a Conservation Regency with a limited definition that “a Regency area which as a whole is declared as conservation area, where natural resources that are not renewable are wisely managed to guarantee their utilization, and renewable natural resources are wisely managed to ensure the sustainability of their supply by preserving and improving the quality of its diversity”. In addition to the biodiversity (genetics, species, and ecosystems) and diverse fauna species, this region stores various types of mines and minerals while also serve as the main stream and catchment area of major rivers in provinces of East Kalimantan and North Kalimantan. Regional Regulation Number 4 of 2007 states that those included in the conservation area consist of protected forest, tana Ulen/Adat, Kayan Mentarang National Park, forest cultivation area, non-forest cultivation area, and other utilization areas.

KEY WORDS
Biodiversity, conservation, lungs of the world, Malinau regency, state assets.

Based on Law as of 1990 concerning Conservation of the Living Natural Resources and Their Ecosystems, conservation of living natural resources is the management of living natural resources in which the utilization is carried out wisely to ensure the sustainability of its supply by preserving and improving the quality of its diversity. Furthermore, Law Number 18 of 2013 concerning The Prevention and Eradication of Forest Destruction in article 6 paragraph c also indicates that there are incentives for parties who contribute in preserving the forest.

The focus of this research is on the implementation of Regional Regulation of Malinau Regency Number 4 of 2007 concerning Malinau Regency as Conservation Regency. According to this regulation, conservation regency is a regency that being declared as a whole as a conservation where its non-renewable natural resources are wisely managed to guarantee its utilization, and where the utilization of renewable natural resources is wisely managed while also improving the quality of their diversity. Theoretically, this research related to public administration, especially policy implementation.
Experts consider the policy implementation phase of a great importance since public policy, in principle, is preceded by policy implementation. Edwards III (1984) states that without effective implementation, the decision of policymakers will not be carried out successfully. Furthermore, Nugroho (2014) also argued that the measure of success and failure determined by formulation, implementation, and policy control, with the weight of 20%, 60%, and 20%, respectively. Therefore, it can be seen that policy implementation requires activities or actions taken in order to carried out the contents of the policy with the aim of achieving policy objectives and occurs after policy formulation.

Nugroho (2014:214) also states that the implementation of policy often involves many policy actors, thus causing the execution of policy implementation becomes complicated. In addition to the number of policy actors involved, different comprehensions toward policy implementation also contributed to its complexity.

As stated in Regional Regulation Number 4 of 2007, considerations in the establishment of Malinau regency as conservation regency are:

(a) The living natural resources in Malinau regency which hold important meanings and roles to the life of living creatures, thus they need to be managed and utilized in harmony and in a balanced manner with the welfare of the local people while also preserving its sustainability;

(b) 90% of Malinau regency is covered by forest with various uses, thus conservation measures are needed to ensure that living natural resources and their ecosystems are preserved and the utilization is wisely managed so they can be in line with sustainable development; and

(c) Elements of living natural resources and their ecosystem are interdependent and influence each other, thus the damage an extinction of one element will affect the environment as a whole.

METHODS OF RESEARCH

Rather than the quantitative measures of the effect of regulation on local people, this research dominantly focused on the implementation process of Regional Regulation Number 4 of 2007 concerning Malinau Regency as Conservation Regency. Furthermore, this research includes the roles of actors involved, hindering and supporting factors, as well as the depiction of empirical model related to policy implementation process. Therefore, the researcher option for qualitative method than quantitative method as the research method. In details, the reasons qualitative method was used in this research:

- This research examine in depth and thoroughly (holistic approach) the conservation phenomenon in Malinau regency. In addition to the implementation process, it also examines the actors or stakeholders roles in implementing the policy contents as well as the hindering and supporting factors of the process;
- The majority of collected information is descriptive qualitative information that sourced from detail observation and in-depth interview, while there were not any questionnaires distributed to sample selected from a population;
- Instead of Malinau regency as a whole, this research is limited to the conservation area. Therefore, the proper approach is a case study approach.

There are also three reasons why researcher opted for case study approach, those reasons are:

- In order for the results of the research to provide important information about the inter-reality relationships which have been observed and the processes that occur in the implementation of conservation programs;
- The case study approach opens the opportunity for researcher to gain deep insights on actors roles within the process of implementation of the conservation programs, thus researcher can find the connection between roles of each actors within the process;
• Through case study approach, based on analysis of existing model of the researched case, researcher can create recommendation model of ideal implementation of conservation policy that support sustainable and applicable forest development.

RESULTS AND DISCUSSION

Policy content discussed in this research is the basis of policy related to the implementation of policy concerning Malinau regency as conservation regency, thus it discusses the content of Regional Regulation Number 4 of 2007 that regulates all issues related to the implementation of conservation policy. The issues discussed include rights, obligations, and roles of actors; rights to conservation implementation; protection of conservation function; conservation area; sources of funds; structuring of conservation implementation; supervision and control; criminal provisions and investigation; regulation concerning the establishment of Malinau regency as a conservation policy is accepted by Malinau regency due to several reasons.

First of all, in regards to geographical location, Malinau regency is an area that ecologically serves as water system controller for the downstream area. Considering that water balance is influenced by forest preservation, forest destruction in the upstream does not only affect Malinau regency but also other regions in Borneo Island. In short, the future is heavily influenced by forest preservation in Malinau regency.

Secondly, due to the extensive of protected forest that include 56.51% of the total area, the duties and responsibilities are felt to be quite heavy. Central government, specifically The Ministry of Forestry, principally shoulders the responsibilities of safeguarding protected areas, including national park and protected forest. In reality, the regional officers do not able to optimally perform their duties due to lack of personnel, equipment, and funds. Of all existing protected areas, only the national park has a management unit based on Malinau equipped with proper facilities. Meanwhile, the other regions are still directly managed by BKSDA, which based on Malinau.

Thirdly, the existing forest area is a massive factory that process flue gas, especially carbon dioxide, into oxygen that is essential for every living creatures in the world. Therefore, in general, Kalimantan alongside its vast forest area is often dubbed as “the lungs of the world” because vegetation are believed to be able to absorb carbon dioxide. Rapid industry development in the entire world resulted in an increase of flue gas that is the major contributor to the greenhouse effect, thus forests role to convert flue gas into oxygen is irreplaceable. Through Kyoto Protocol, which has not yet being ratified by Indonesian government, developed countries, which are members of Annex 1 of the Kyoto Protocol, are required to invest a part of their profits to save the forests. Meanwhile, target of investment countries are those developing countries that still have sizable area of forest. The last reason for the acceptance of conservation policy by Malinau regency government is because of the broader authority granted to the regional government.

Finally, law Number 22 of 1999 and Law Number 32 of 2014 bestow huge responsibilities to protect the forests and environment to regional governments. The authority granted covers all government affairs except defense and security, foreign relations, monetary, judicial, and religious affairs. This often affect the resource of regional government since, as the consequence of granted authority, the government are required to generate own-source revenue from the development of owned resources available to each regions. Utilization of natural resources will, directly or indirectly, have an impact on environmental changes. Furthermore, exploitation activities such as utilization of forest products, forest conversion for other purposes, and minerals mining, will results in the loss of a number of habitats as well as reduced forest ability to convert flue gas into oxygen. In addition, these activities could cause a performance decline in the forest function as a rainwater catchment area, thus increase the frequency of flooding.

The research findings related to the contents of the policy are in line with Grindle (1980) theory of “Content and Context” which stated that the success of policy implementation is determined by contents.
Contents of policy includes:

- Interest affected. A policy in its implementation involves many interests that influences the implementation process;
- Type of benefits. Policy contents are required to show and explain some type of benefits that have positive impacts which generated by the implementation of a policy;
- Extent of change envisioned. The policy is required to state the degree of change to be achieved;
- Site of decision-making. The location of decision making in a particular policy plays an important role in policy implementation phase. Thus, it is required to explain the location of decision-making. Furthermore, it is also required to assess whether the decision maker related to the policy implementation is appropriate.
- Program implementer. The success of policy or program execution depends on the existence of competent policy implementers involved, and has to be stated clearly in the policy contents that includes the duties and functions of each implementers.
- Resources committed. In regards to the utilized resources, a program, such as conservation program, has to be supported by adequate resources to ensure the success of implementation process.

Meanwhile, contexts of policy includes:

- Power, interest, and strategies of actors involved. It is necessary to consider the power, interests, and strategies used by actors involved in a policy to ensure the smooth running of a policy implementation. Without this consideration, it is possible that the results of implementation policy will differ from the expected results;
- Institution and regime characteristics. The environment in which a policy is implemented also influences its success. In regards to this context, local people who lives around the forest are required to be empowered in order for them to be able to support implemented conservation programs and activities;
- Compliance and responsiveness. In the process of implementing a policy, compliance and responsiveness from the implementers are crucial. This context is not only limited to regional governments and central government, but also includes donor countries, non-governmental organization, and other agencies that concerned about the protection and preservation of forest area.

The policy implementation process cannot be separated from policy contents, it becomes the foundation used in implementing the policy instead.

Ripley (1985), look at the policy implementation from two perspectives. The first perspective is a compliance perspective that means that the success of implementation is related to the compliance of the implementer in implementing different policies. Therefore, two major focuses of implementation studies which are compliance and “what is happening?” must be included in policy documents. The compliance aspect of policy implementers in complying with the standard operating procedures assessed using several indicators. Those indicators are:

- Do implementers comply with established procedures?
- Is the implementation of activities in accordance with the schedule that has been prepared?
- Are the target groups in accordance with the criteria set by the policy?
- Is the quality of policy output delivered to the target group in accordance to the standards set by the policy?
- Do implementers not violate the restrictions that have been made?

As for this research, the procedures for implementing policies and parties involved are regulated in Regional Regulation Number 4 of 2007, as well as the benefits that will be received by local people and the sanctions to violators of provisions contained in the policy content.
CONCLUSION AND RECOMMENDATIONS

Policy implementation process influenced by four factors, those factors is policy contents, conservation area, human resources, and budget. Policy contents influence implementation because it is the groundwork of stakeholders involved in forest conservation activities. Policy contents have not clearly set sanctions for policy violators and the limits of policy implementer authority. Meanwhile, conservation area been regulated by the policy that includes national parks, protected forests and other conservation areas, such as forest area that are preserved and managed by local people, which are established by regent’s decree based on applicable legislation. However, vague boundaries and lack of socialization of the conservation policy contents have led to violations of conservation forest boundaries by local people and industrialists. Furthermore, human resources related to Malinau regency policy as a conservation policy consist of government and non-government bodies such as Environment Agency of Malinau, Department of Forestry, Kayan Mentarang National Park, World Wildlife Fund, and youth activists. Readiness and availability related to human resource capacity have not met the required technical qualifications that include forest resource management, mapping, analysis, monitoring and evaluation of carbon deposits, and other technical capabilities. In addition, the ability to properly and precisely formulate policies is also lacking. Based on analysis and discussion on budget aspect, it can be concluded that normative funding has been regulated in the Regional Regulation of Malinau Regency Number 4 of 2007. It states that the sources of funding for conservation regency are from binding and non-binding sources. Binding sources includes the State Budget, Regional Development Budget I, Regional Development Budget II, and Special Fund for Conservation Regency. While non-binding sources includes funding from external funds, donor agencies, community, individual, private sector, carbon trading, and other environmental services. Presently, funding source for conservation is unlikely to come from regional development budget, thus funds from state budget and other non-binding resources are required. The existence of conservation policy helps protect the preservation of forest and the ecosystem, therefore is a wise decision taken by Malinau regency government to safeguard forest so that it could provide social and economical benefits to the people.

The roles of local governments in the process of implementing regional regulation concerning Malinau regency as a conservation regency includes execution of conservation program, protection of the conservation function, and structuring the implementation of conservation programs. The implementation of Regional Regulation Number 4 of 2007 concerning The Establishment of Malinau Regency as a Conservation Regency, especially supervision and controlling function, has been successfully executed by the appointed department. Department of Forestry has played a role to the conservation policy implementation in Malinau regency by conducting supervision to prevent damage on natural resources in conservation area. In addition, Department of Forestry has collaborated with village officials and local people who live around the conservation area to improve supervision effectiveness. Furthermore, Department of Forestry and village apparatus have optimally facilitated solving problems related to forest destruction. This can be seen from community activities to reforest deforested land by planting trees that are facilitated by Department of Forestry through distribution of tree seedlings using office’s budget. The roles of local people and NGOs in the implementation of conservation policy have been stated in Regional Regulation Number 4 of 2007 wherein listed the rights, responsibilities, and roles of the local people. The locals have the same and widest opportunity to contribute in conservation efforts. The execution is carried out by improving the local people independence, local people empowerment, increased partnerships, developing local people abilities, fostering local people responsiveness to conduct supervision, feedbacks, as well as sharing information and report. Regional government has also collaborate with NGOs. Recently, regional government and World Wildlife Fund that based in Indonesia have collaborated to improve management capacity of Kayan Mentarang National Park through cooperation agreements that have significance nationally, as the groundwork for realizing a sustainable development model. Sustainable forest utilization is the ideal concept that must
be achieved, thus World Wildlife Fund committed to help Malinau regency government to realize the ideal conservation regency as a form of sustainable development as well as calling all stakeholders to support Malinau regency during the implementation process. Meanwhile, private sectors have been exploiting the natural resources in conservation area without having a clear concept towards preservation of conservation area that led to forest destruction. Regional government often knows private sectors exploitations of natural resources without permissions from central government. However, misunderstanding on the regulation concerning forest management by private sector are due to vague authority ownership. To date, regional government assumed that the provincial government is the one responsible for the management. In fact, based on regulation, regional government is responsible to protected forest, while conservation forest and production forest are the responsibility of central government. Empirically, private sector’s role through collaboration with government is not only limited to economic functions in the management of conservation area, it also has to pay attention to the ecological and social functions. The notion of conservation area privatization should also includes ensuring the functions and benefits of the region to remain in good condition, providing welfare for the local people, providing economic value to improve the quality of conservation area, and contribute donation for area development. All this time, Kayan Mentaran National Park considered containing many benefits that has not fully recognized and utilized. It is a conservation area that hold an important role in protecting the existence of ecosystems and their biodiversity while also as a representation of a particular ecotype.

The impact of implementation of Regional Regulation Number 4 of 2007 concerning Malinau Regency as a Conservation Regency occurs in primary forests, secondary forests, plantation forests, and protected forests. Furthermore, there is significant impact on socio-economic of local people due to reduced unemployment through more job opportunities related to management of conservation forests. While the negative effect is conflicts that arised between local people and party responsible for forest management. The conflict generally related to the utilization of land, timber theft, and territorial boundaries that may be used by indigenous people. Furthermore, since the area to be utilized is narrow, locals are often utilizing land in protected forest illegally.

Factors that hinder the implementation include policy contents, policy environment, and social, economic and cultural. The failure of policy implementation is due to vague policy contents, which in turn caused by the purpose and objectives not clearly stated, facilities and prioritization as well as policy programs are too general while some are not stated. Furthermore, lack of supporting resources such as human, funds and time also contribute to the failure. Environmental factors also able to influences the policy, thus supervision is required to anticipate and improve readiness to overcome environmental problems that arises in the future. However, environmental becomes the hindering factor due to lack of supervision and control on the execution of planned activities. Economic barriers are created due to lack of funding to run the conservation program. Meanwhile, from the social aspect, lack of public knowledge about the importance of conservation for the protection of forest due to lack of socialization regarding conservation policy.

To be considered as ideal, conservation policy model must take into account the conservation area and the local people. The biodiversity in the conservation area has to be preserved while also fulfill the social and economic needs of the people living around the protected forest and conservation areas. These two conditions have to be maintained simultaneously in order for the conservation policy implementation to meet the objectives stated in Regional Regulation Number 4 of 2007 concerning Malinau Regency as a Conservation Regency.

Based on the conclusion, suggestions for improvement are as follows:

- Every policy making related to the utilization of forest resources has to involve local people since they are the first stakeholders to be impacted by the policy implementation. In addition, local people involvement will encouraged them to support the conservation policy achieving its objectives;
• The wisdom of the local people must be considered in every policy making regarding the management of natural resources specifically that relates to their rights as Dayak tribe that has incorporated forest, land, and water to the characteristic of its culture and traditions;

• In realizing conservation regency, the implementation must be accompanied by programs that are designed to improve the welfare of local people, especially those who are partners of the government. Therefore, improvement of human resources must be prioritized;

• The participation of local people in achieving conservation objectives is the priority, thus it is hoped that the local people are willing to become government partner in achieving the objectives;

• As a region that has high degree of biodiversity, the role of higher education institutions, especially those based on East Kalimantan and North Kalimantan, are expected to further develop themselves in the field of research by increasing the number of researches especially those related to the welfare of local people since those who lives around the forest are classified as poor people.

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DETERMINANTS OF BEHAVIORAL INTENTION IN AGROTOURISM VISITING

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ABSTRACT
Tourism is one of the key supporting sectors in Indonesian economy which has significant contribution to its GDP. Lately, agri-tourism becomes a featured product of Indonesian tourism in various scales. Even if it grows in a significant way, but developing agri-tourism still need additional support from related parties, especially from consumers. Customers’ satisfaction has a crucial impact in determining their loyalty and behavior, and also affects the sustainability of agri-tourism business. Any problem on these fields can hold up the agri-tourism development. This research is aimed to analyze the effect of service quality, customer’s value, livelihood assets, destination image, and performance of local government on behavioral attention of agri-tourism's visitors. This research employed structural equation modeling (SEM) using WarpPLS software. The results indicate that both service quality of agri-tourism and quality of human resource have significant effects on relationship marketing, customers’ satisfaction, and behaviora intention. Moreover, livelihood assets aspect also has affected the customers’ behavioral attention significantly.

KEY WORDS
Agri-tourism, behavioral intention, livelihood asset, agribusiness, management.

Tourism is one of the important sectors in the Indonesian economy, which tourism holds a great contribution to local revenue and state revenue. One of the elements in the agricultural sector that currently has a great potential to be developed is agritourism. The potency of agritourism is addressed to the natural beauty of agriculture and the production of the developing agricultural sector. Agritourism is a series of tourism activity that uses the agricultural potency as the tourist attraction, both the potential scenery in the agricultural area, the specific characteristic, and the diversity of production activities and the agricultural technology, and the culture of the farming community. Agritourism is aimed at broadening knowledge, recreational experience, and business relationship in the agricultural sector including staple foods, horticultural products, plantation, fisheries, and livestock farming. In addition, the agritourism development is also aimed at regional agricultural development, improving the farmer’s welfare, the utilization of regional potency, ecological balance, the employment opportunities for local residents, stimulating the growth of the organization supporting agritourism, and improving the marketing attempt for agricultural products.

Batu City, Malang Regency, and Malang City are three administrative areas that are integrated with the area for development and they are the epicenter of tourism in East Java Province. Batu City and Malang Regency provide many agritourism destination concepts, while Malang City plays a role as the support for the provision of facility and tourism service. It is in line with a statement by Soemarno (1999) that rural areas and remote areas can be the production center, the location of tourism, while the central area or the urban area can be a tourism service area.

Some regions in the Greater Malang begin to develop the agritourism activity as a part of the concept of tourism village development. Even in some locations, agritourism is also presented based on themes, such as agritourism for education, scientific agritourism or agritourism for research, agritourism for health for the elders, and the tourism for teens and family in form of outbound.

Every manager of agritourism applies different management. In modern management, quality is the main standard for the success of a business. The core thing of every business
is marketing, and the success of marketing is mostly determined by customer satisfaction. Total Quality Management is a customer satisfaction-oriented management system. According to Deriawan (2015), quality performance and relationship marketing are also important things for determining customer satisfaction. The destination image has a correlation with the quality performance that is considered as customer loyalty and it is in line with a research conducted by Jankingthong (2012). In this research, behavioral intention is also related to the aspect of the livelihood of the visitor and the regional government performance in facilitating tourism development. Based on a research done by Halima Begum (2014), the role of government gives an impact on customer's perception for the tourism sustainability. In addition, the researcher expected that the livelihood of the customer is a new variable assumed to have an impact on Behavioral Intention. According to Parasuraman (1985), the dimension of behavioral intention is in form of recommendation, repurchase intention, and pay more.

A consumer as the subject who uses agritourism services tends to change their behavior. The external stimulus with the existence of another object that is more interesting can make customer behavior changes. The customer loyalty will be maintained through trustworthiness and a commitment. All of them can happen from the consumer satisfaction in using a service. Therefore, the research on consumer behavior i.e. Behavioral Intention as the motivation for tourism development in the Greater Malang.

Nowadays, there is numerous agritourism with various concepts in the Greater Malang. A large-scale agritourism business with a strong capital has relatively developed and it has a good management standard. Nevertheless, the small and micro-scale agritourism owned by the farmers or managed by the community individually and the farmer groups do not have a good management standard. In general, small-scale agritourism has fewer visitors, low customer's loyalty, no adequate facility, no standardization in product quality and service, and less promotion.

The sustainable agritourism development needs to be supported by all relevant aspects, from both the key of marketing i.e. consumers and the individual side of the manager, social, resource, financial, and the physical conditions of agritourism. Therefore, a research on visitors' Behavioral Intention is needed. This research aimed to analyze the influence of quality performance, customer value, the livelihoods assets of the visitor, destination image, and regional government performance towards the Behavioral Intention of agritourism visitors in the Greater Malang.

LITERATURE REVIEW

Consumer behavior is an important and complicated concept in marketing management. This conception is important because it contains a prediction and an expectation of a marketer about consumer behavior since the initiation of purchase ideas up to the post-purchase conditions. A consumer behavior is defined by Setiadi (2010) as an action that is directly involved in acquiring, consuming, and using a product or service, including the decision that precedes this decision. This definition emphasizes three groups of the process including i.e. pre-purchasing, purchasing, and post-purchasing.

According to Kotler (2001), the factors that influence consumer behavior are the social factor, internal factor, and psychological factor. The social factor consists of culture, sub-culture, social class, reference group, family, and social status. The internal factor consists of age and the stages of the human life cycle, occupation, economic situation, lifestyle, and personality and self-concept. Meanwhile, the psychological factor consists of motivation, perception, learning, belief, and attitude.

In this research, the variables used and expected to influence the consumer behavior especially the visitor behavioral intention are performance quality of destination, performance quality of human resources, the livelihood of the visitor, destination image, customer value, relationship marketing, consumer satisfaction, and the regional government performance. A quality is an effort to meet a number of factors towards the effectiveness and efficiency of company goal achievement. The factors referred to the product and service that becomes a
marketing tool to achieve profitability. Through the concept, a rational and subjective measurement can be created by the product providers and the users. However, basically, quality remains come from customer perception as the final user of the product offered.

An image is the combination of emotion and cognitive components in an individual so that it cannot be clearly predicted. Therefore, the company must keep and maintain the company image as it is so that it can always give a positive impact on the survival of the company (Davidoff, 1994). Related to the agritourism destination in this research, destination image should always be maintained to ensure an increase in number of visitors in the future.

The customer value can be divided into two big categories: a value that is perceived by the customer and the value expected by the customer. The value perceived by the customer is defined as a comparison between benefit and sacrifice of product or service performance. Meanwhile, the expected value is the customer’s emotional attitude towards the expected ideal product and service (Parasuraman, 2000).

Another variable used here is customer/consumer satisfaction. According to Kotler (2001), the definition of customer satisfaction is as follows: Customer satisfaction is about the assumption on the performance of a product or service whether it has met the customer expectation or not. If the performance of a product is lower than customer expectation, the customer is not satisfied, and if the achievement matches or exceeds the customer expectation, the customer is satisfied.

Relationship marketing is a process to create, maintain, and improve the strong relationships with the customers and other stakeholders. According to Kotler (2001), the dimension of relationship marketing comprises trustworthiness, commitment, communication, and the ability to mitigate a conflict.

Another variable that is important in this research is the livelihood of the customer. According to Can (2013), etymologically, the definition of livelihood involves an asset (nature, human, financial, social, and physics), activities in which the access of the assets is mediated by an institution and social relations that dictate the results obtained by individuals and families simultaneously. The livelihood condition, in terms of character, social influence, financial, physical, and affecting nature are expected to be one of the indicators in consumer behavior.

Consumer behavioral intention is frequently based on the possible action that will be performed by the consumer. Behavioral intention is defined as consumer expectation to behave according to a certain way such as to own, discard, and to use a product or service. Thereby, the consumer is able to create an expectation to find information, to tell other people related to their experience when using a product, purchasing a certain product or service, and discarding the product in a certain way.

According to Peter and Olson (2013), behavioral intention is a proposition that relates someone to future actions. Parasuraman (2000) stated, “Behavioral intentions can be viewed as indicators that signal whether customers will remain with or defect from the company.” The definition implies that behavioral intention can be seen as an indicator that signals whether the customer will remain with or defect from the company’s product or service. Behavioral Intention is divided into three dimensions: Recommendation, Repurchase Intention, and Pay More. A recommendation is a behavioral intention of someone to encourage the customer’s friends or relatives to use a product or service from a company or recommends the company to other people. This indicated that they had performed the marketing for the company indirectly and they invited the consumers to the company. Repurchase intention is a behavioral intention of someone to use a product twice or more. Meanwhile, pay more is a behavioral intention that is occurred as the result of consumer satisfaction towards a business entity such as the consumer’s willingness to pay even though the price becomes more expensive.

METHODS OF RESEARCH

The number of respondent was 130 visitors from thirteen agri-tourism objects in Malang as the most potential regency on agricultural and tourism sector, especially in East
Java. Data analysis method employed was Structural Equation Modeling (SEM) using Warp PLS software.

RESULTS AND DISCUSSION

In this research, the agritourism data of Batu city was represented by Bumiaji District while the agritourism data of Malang Regency was represented by Ponokosumo District. Based on those data, those districts played a big role in agritourism development especially in small-scale (individually/in-group). From the objective stated above i.e. analyzing the influence of quality performance, customer value, livelihoods assets, destination image, and the regional government performance toward the Behavioral Intention of the agritourism visitor in the Greater Malang, it was obtained a result based on Structural Equation Modeling (SEM) analysis used WarpPLS software as follows.

Outer-Model Assessment. The assessment of reflective outer model could be accepted using the result of Indicator Reliability, i.e. it was assessed based on the value of variance from the indicators to explain the latent variables. The value of the load factor for each variable was 0.6 – 0.7. It means that those variables were qualified for explanatory research. Overall, the internal consistency reliability that was seen from the value composite reliability and aimed to measure the reliability of latent variable using the indicator had a value of 0.6 – 0.7. It means that it was qualified for explanatory research. Meanwhile, the Convergent validity, an assessment used for measure the correlation between the reflective indicators with the latent variable score, had a value of >0.5 indicating that it was accepted for explanatory research.

Outer-Model Assessment. The structural model assessment or inner model with PLS could be seen from the percentage of variance that had been explained i.e. by seeing the $R^2$ value to measure the impact between the latent variables. In this research, $R^2$ value based on the R2 value of Relationship Marketing (RM) latent variable was 0.29. It shows that the diversity of RM latent variable could be explained by the latent variable of customer value and quality performance of 29% while the rest i.e. 71%, was the contribution of other variables that were not discussed in this research.

The local visitor satisfaction had an $R^2$ value of 0.52, indicating that the diversity of visitor satisfaction could be explained by the customer value ($X_1$), quality performance ($X_2$), and Relationship Marketing ($Y_1$) of 52%, while the rest, 48%, was the contribution of other latent variables that influenced visitor satisfaction, which was not discussed in this research.

According to the $R^2$ value, Behavioral Intention ($B_1$) had a value of 0.34. It indicated that the diversity of BI could be explained by customer value ($X_1$), Quality Performance ($X_2$), the Livelihood of the Visitor ($X_3$), Regional Government Performance ($X_5$), and Visitor Satisfaction ($Y_2$) of 34%; Meanwhile the rest, 66%, was the contribution from other variables that were not discussed in this research.

The next test toward inner model was Goodness of Fit (GoF) from the structural model. It was important to be conducted since the objective of this research, besides for hypothesis testing, was to find out the model that was fit to the original data. It was based on the conceptual model. The Goodness of Fit (GoF) test consisted of ten criteria of research. The result of the test can be seen in Table 1 below.

The results show that there is a direct relationship between quality performance of destination ($X_2$) toward the dependent variable showed the significant and positive impact of destination quality ($X_2$) toward relationship marketing ($Y_1$) with a coefficient value of 0.27 at a P value of 0.01; the significant and positive impact of $X_2$ toward visitor satisfaction ($Y_2$) with a coefficient value of 0.25 at a P value of 0.01; and the significant and positive impact of $X_2$ toward the visitor behavioral intention ($Y_3$) with a coefficient value of 0.12 at a P value of 0.09.

The Quality of Human Resource Performance ($X_3$) had a significant and positive impact on relationship marketing ($Y_1$) with a coefficient value of 0.36 at a P value of 0.01. It indicates that the high quality of destination performance will give an impact on the increase in relationship marketing of the destination. The $X_3$ variable had a significant and positive
impact on visitor satisfaction \((Y_2)\) with a coefficient value of 0.11 at a P value of 0.1, indicating that the higher the quality performance of destination is, the higher the visitor satisfaction is. In addition, the \(X_3\) variable also had a significant and positive impact with a coefficient value of 0.25 at a P value less than 0.01, indicating that the high quality of destination performance will influence the visitor behavioral intention to make a decision in re-visiting the destination and recommending the destination to other people.

Table 1 – The General Result of SEM Analysis Model Test

| Criteria                          | Results       | Testing Criteria         |
|----------------------------------|---------------|--------------------------|
| Average path coefficient (APC)   | \(\text{APC} = 0.184\) | Accepted (\(p < 0.05\))  |
|                                  | \(\text{P} = 0.008\) |                          |
| Average R-Squared (ARS)          | \(\text{ARS} = 0.385\) | Accepted (\(p < 0.05\))  |
|                                  | \(\text{P} = 0.001\) |                          |
| Average adjusted R-squared (AARS)| \(\text{AARS} = 0.362\) | Accepted (\(p < 0.05\))  |
|                                  | \(\text{P} = 0.001\) |                          |
| Average Block VIF (AVIF)         | 1.453         | Accepted (AVIF ≤ 3.3)    |
| Average Full Collinearity VIF (AFVIF) | 1.628      | Accepted (AFVIF ≤ 3.3)   |
| Tenenhaus GoF (GoF)              | 0.466         | Accepted (GoF ≥ 0.36)     |
| Sympson’s paradox ratio (SPR)    | 0.857         | Accepted (SPR ≥ 0.7)      |
| R-squared contribution ratio (RSCR) | 0.985      | Accepted (RSCR ≥ 0.9)     |
| Statistical suppression ratio (SSR) | 1.000      | Accepted (SSR ≥ 0.7)      |
| Non-linear bivariate causality direction ratio (NLBCRD) | 0.929 | Accepted (NLBCRD ≥ 0.7)   |

Source: Processed data using WarpPLS analysis, 2018.

The livelihood of the visitor \((X_4)\) from SEM analysis showed that it had a significant and positive impact with a coefficient as 0.12 at a P value of 0.09. It means that the high capability owned by the visitor in either humanity, social, capital, physical, or financial will influence the visitor behavioral intention to re-visit and recommend the destination to other people and the willingness to pay more.

![Figure 1 – Structural Model (Source: Primary Data Processed, 2018)](image)

**Note:** CV \((X_1)\) = Customer Value; QD \((X_2)\) = the Quality of Destination Performance; QH \((X_3)\) = the Quality of Human Resource Performance in the Destination; LV \((X_4)\) = the Livelihood of the Visitor; DI \((X_5)\) = Destination Image; RGP \((X_6)\) = Regional Government Performance; RM \((Y_1)\) = Relationship Marketing; VS \((Y_2)\) = Visitor Satisfaction; BI \((Y_3)\) = Behavioral Intention.
The result of SEM analysis showed that the destination image \( (X_3) \) had no significant impact on the visitor behavioral intention toward the destination \( (Y_3) \). Meanwhile, the relationship between local government performances \( (X_4) \) toward the visitor behavioral intention \( (Y_3) \) showed a significant and positive impact at a P value of 0.02 with a coefficient value of 0.18. It means that good regional government performance will influence the visitor behavioral intention to re-visit and recommend the destination to other people. The regional government performance in this research was the performance in supporting the tourism sector development, especially for agritourism by developing and providing the supported facilities such as road access, information center, promotion activity, transportation facility and infrastructure, and accommodation.

The relationship between relationship marketing \( (Y_1) \) toward visitor satisfaction \( (Y_2) \) showed a significant and positive impact at a P value less than 0.01 with a coefficient value of 0.52. It means that good relationship marketing that has been performed will increase visitor satisfaction. The indicators of the relationship in this research are trustworthy, commitment, and communication between the visitor and the manager of the destination place.

The visitor satisfaction \( (Y_2) \) in SEM analysis showed a direct relationship and a significant and positive impact on behavioral intention \( (Y_3) \) with a coefficient value of 0.24 at a P value less than 0.01. This showed that the high visitor satisfaction has significant influence on visitor behavioral intention to re-visit and recommend the destination to other people, and their willingness to pay more.

Additionally, the direct relationship between customers’ value \( (X_1) \) toward the dependent variables had no significant impact on either relationship marketing \( (Y_1) \), visitor satisfaction \( (Y_2) \) or Behavioral Intention \( (Y_3) \) since it was at a P value of more than 0.1.

**CONCLUSION AND SUGGESTIONS**

The result of SEM analysis shows that the quality performance of destination has a significant impact on relationship marketing, visitor satisfaction, and behavioral intention. Meanwhile, the quality of human resource performance has a significant impact on relationship marketing, visitor satisfaction, and behavioral intention. Additionally, the livelihoods of the visitor, visitor satisfaction, and regional government performance have a significant impact on behavioral intention.

The improvement and the development in all aspects related to agritourism are needed. Based on the data and the result of SEM analysis, it shows that most of the respondents (the visitors) have behavioral intention to recommend the agritourism destination to other people. However, just a few of them who intends to re-visit since the agritourism has a similar concept. Therefore, a creative idea for agritourism concept needs to be developed.

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ABSTRACT
Indonesia is one of the largest countries with natural resources wealth scattered on land and at sea. The natural resources wealth owned is beneficial to improve the state economy and the people welfare. The management and the utilization of the natural resources are expected to provide benefits for all people scattered in the territory of the Unitary State of the Republic of Indonesia, including in Southwest Maluku Regency, Maluku Province. Gold mining is the wealth owned by people in Southwest Maluku Regency, precisely in Romang Island. The management and the utilization of the gold mining have not been able to improve the welfare of the people, but instead it creates conflict among actors. The conflict among actors that occurred was caused by differences in interests on gold resources. As the result of the conflict, social relation among the people was broken, and at this level, the possibility of conflict escalation will occur. This research uses qualitative method with case study approach. The purposes of this research are to analyze the conflicts among the actors and the possibility of the conflict escalation. The results of this study indicate that the conflicting actors are the state, the private and the people, while the possibility of conflict escalation is due to the creation of social class structure and the weakening of cohesiveness in the society.

KEY WORDS
Conflict, gold mining, actor, escalation, Southwest Maluku.

The development of the mining industry in 1970 in Indonesia helped increase the role of the mining industry to meet the domestic and the foreign needs. Various commodities are processed from the mining of oil and natural gas, coal, tin, gold and silver, as well as minerals such as sand, river stone, limestone, which is also followed by the growth of the management and manufacturing of finished goods industries. The impacts of the mining industry vary greatly depending on the type of commodity and its spreading characteristics. In addition to the environmental impacts, mining activities may also have social, economic and criminal impacts (Sudrajat, 2006) as well as conflicts.

The impact of the management and the utilization of natural resources (NR) by mining occurred in various regions in Indonesia, one of them is in Maluku. Maluku lies between the confluence of three main plates forming the earth’s crust namely Eurasia plate (north), Indonesia Australia plate (south), and Pacific plate (west), which is a potential area for the formation of various mineral reserves, geothermal, and hydrocarbon basins. The mining potential and the potential energy to be developed commercially i.e gold, copper, nickel, limestone, sulfur, petroleum, and geothermal energy are located in various regions of Maluku Province (Hanafi, 2012). NR owned by Maluku also provides benefits for the society, but also presents problems of social, economic, health to criminal acts that culminate in conflict. Humanitarian problems (social, economic, health, to conflict) also occur in Buru regency, Maluku Province. The traditional mining extractive process that has taken place since October 2011 in several places in Buru regency, Maluku has created many problems, such as population growth, environmental damage and pollution resulting in health quality, prostitution to horizontal conflicts (Hasyimi et.al, 2014).

In addition to Buru regency, there is also one regency in Maluku which is experiencing mining problems, namely Southwest Maluku Regency, precisely in Romang Island. Romang Island is one of the small islands rich in natural resources with an area of 1129.6 km².
covering: land area of 192.20 km² and sea area for regency governance area (0-2 miles) of 465.8 km² and provincial governance area (2-4 miles) of 472.6 km², with the length of coastline 121.76 km (Directory of Small Islands, 2012). The land fertility owned by this island has positive impact on the people. Superior commodities such as: forest nutmeg, super nutmeg and cloves are the types of plants living on the land of Romang Island.

In addition to these commodities, the land of Romang Island also holds wealth of gold which is abundant. The wealth of NR owned by Romang Island also provides benefits and improves the economy for the people, however, the wealth of natural resources is no longer provides benefits to the people when the mining corporations that manage and utilize the gold resources in Romang Island come. PT GBU is a subsidiary of Robust Resources Limited from Australia which had explored gold mine in Romang Island since 2008 until 2016 with land area 9000 Ha of total 17,500 Ha. The exploration activities are centered in one of the villages on Romang island, i.e the village of Hila. The extractive activities conducted by PT GBU did not have positive impact on the local people. Since the operation of PT GBU from 2008-2016, it had not been able to improve the welfare of the people. But what happened was conflict that breaks the people relationship. Romang Island people split into two groups, namely the pro-mining group and the group that contra against the mining.

In general, the conflicts happened in mining areas, related to differences in the concept of property and other resources, are the conflicts involving society with companies and companies with the state. The research results of Dimas et.al (2014) showed that mining activities conducted by PT Mahakam since 2009 in Marangkayu Sub-district, Kutai Kartanegara Regency are not fully run smoothly without any conflict. The activities spawned land dispute conflicts between PT Mahakam and people around the mining site. The status of the land that becomes the working area of PT Mahakam in accordance with its work contract is Forest Area, in which to operate in the region PT Mahakam has obtained the permission from the Ministry of Forestry. However, the people around the mining still maintain that the land is their customary property.

Another study was also raised by Ahmad (2014) on the conflict that occurred in the gold mining area of Balaesang Tanjung Sub-district, Donggala Regency, the conflict involving the community and the company namely P.T CMA. The presence of P.T CMA triggered the residents protests, because the mining concessions acquired impacted on thousands hectares of the residents' gardens including coconut, cloves and other short-term productive crops. From generation to generation the plantation has become the source of life of the people who depend their lives on nature, land and water of the region. This is exacerbated by land tenure actions by the companies that prohibit the communities from doing gardening activities on the lands of mining concessions.

Conflict in the gold mining area of Romang Island, Southwest Maluku is not different from conflicts in other areas. The conflicts that occur are inter-actor conflicts caused by different interests in utilizing the region's gold resources. The conflicts undermined the social fabric of the society that had been created long time ago. Mutual respect and help are no longer the basis of living together, but what happen is hatred and vengeance. In this context, the possibility of conflict will be widespread. Based on this background, then the formulation of this research problem is, how the conflict among the actors in the gold mining region of Southwest Maluku Regency can happen? The purpose of this study is to analyze the conflicting actors, conflict typology and possible escalation of conflict.

METHODS OF RESEARCH

The method used in this research is qualitative with case study approach based on critical paradigm. The critical (subjectivism) paradigm can be used to dismantle the problem of power relations and the contestation of actors underlying the patterns of authorization, utilization and ownership of natural resources. This study is located in the mining area of Romang Island, Southwest Maluku Regency. Informants who become the objects of this study are Romang Island people in conflict and the stakeholders who are related to the management and utilization of the gold resources. The data used in this study are primary
and secondary data. Primary data were obtained from in-depth interviews, while secondary data were obtained through literatures related to this study. This study lasted for five months, from January-June 2018.

RESULTS AND DISCUSSION

**Actors Contestation toward Gold Resources.** The management and the utilization of gold resources in Romang Island, Southwest Maluku Regency also give rise to vertical conflicts involving three actors. The three actors, the state as the first actor, the private (corporation or company) as the second actor and the society as the third actor who always vulnerable against injustice, due to the power of the first and the second actors. Each actors has their own power. The first and the second actors are the actors of power and the capital owners who have the highest authority in making decisions related to the management and the utilization of a resource, while the third actor is the actor who always feels the impact of the management and the utilization of a resource.

![Figure 1 - The contesting actors](image)

Figure 1 shows clearly the position, the power and the relationship among the actors. The government or the state and the company or the corporation are the two actors who have power relations (main actors (Emenyeonu and Bahtiar, 2017)). The state as the holder of the highest regulation and the company as the manager and the utilization of natural resources can not be separated. Therefore, the company will need the state as mandator of the implementation of a mining activity through the granting of licenses by referring to regulations, and the state will need the companies in managing the natural resources. In principle these two actors will support each other and will not harm one party. Sometimes, both actors also use their power to intimidate society and eliminate the society from their ownership, either individually or in groups. To achieve their goals, they will use any ways, so that their goals can be achieved. Thus, the society frequently serve as commodity.

The actors involved in the utilization of natural resources in the gold mining area of Romang Island are state, private and local people. The state or the government in question is the government of MTB and MBD regency, the government of Romang Island Regency and the government of Romang Island sub-district. These actors have the power to grant permission to the company to conduct mining activities in Romang Island. Without these actors, the company (PT GBU) will not come to the territory of Romang Island and perform extractive mining activities. The highest regulatory holder is in the hand of the state, then the licensing process related to the presence of PT GBU becomes the task of the state. Of course, each actors has their own interest in the management and the utilization of gold resources in Romang Island.

The corporation or company, as the second actor, also has significant role in the management and their utilization of gold resources in Romang Island. Because the corporation, in this case PT GBU, is the company granted permission by the state to manage and utilize the gold resources. In the process of exploration, PT GBU has pocketed various permits from the government of MTB and MBD regency as well as the permission of the government of Romang Island Sub-district. However, PT GBU still disturbs the people with its presence. Local people as the owners of these resources, often intimidated for the achievement of the company interests. In fact, if the management and the utilization of the natural resources is done by accommodating the needs and the interests of the society, the society will accept the presence of PT GBU widely.
The local people as the third actor also has an interest in the management and the utilization of gold resources. The society want transparent management process and accommodate their interests and needs. But this hope is gone, because what is expected does not match the reality faced. The society tend to be ignored from their property rights. As the low class society and do not have power to defend their rights, they only follow what the government and the company do. Government powers and authority are used to marginalize the society. Nevertheless, people are still seeking solutions to their rights by fighting against the policies decided by the government and the company, even if finally it is unsuccessful. The resistance is continued, to the extent that society split into two groups and horizontal conflict occur.

Each actors has different capabilities in accessing the resources in Romang Island. Such access in the perspective of Ribot and Pelusso (2003) is a collection of power more emphasising on "the ability to use" rather than a cluster of rights. In addition, access can also be seen in a broader relationship, which can make individuals or society communities gain benefits or profits from the resources, even if they do not have property relationships. In line with the views or perspective of Ribot and Pelusso, it can be said that the actors concerned with the gold resources in Romang Island have the power to utilize these resources. Especially the state and the private, who do not have property relationships, but because of their strong regulation and access, then they can access the gold resources in Romang Island. Thus, access to a resource is not measured by the ownership of a property, but the extent to which the power in accessing the property is owned.

Conflict Typology in the Gold Mining Area of Romang Island. Fisher et.al (2001), divides the types of conflict into three, namely latent conflict, open conflict and surface conflict. Of these three types of conflict, the ones occurred in the gold mining area of Romang Island is latent conflict and open conflict. Both types of conflict can be seen through periodization of conflict over the time. The conflict in Hila Village began in 2008 when PT GBU started to do drilling activities. In the beginning of operation, the process went well in accordance with the expectations of the society. Because there was recognition from the government that the land was owned by maturumah, so the process was allowed to run. Such recognition strengthened the society to let PT GBU continue to operate. Then, at the beginning of 2010, the extractive activities conducted by PT GBU were still being carried out and the process was running well. But in the mid-2010, there had been deviation in the process. The principles of mutual agreement between the people and the government, and even the company, were changing. There were certain actors who began to take advantage of the process. There were unilateral claims against some mining areas conducted by certain actors. This one-sided claim, then triggered suspicions of the society against the government and PT GBU.

In 2012 the suspicions began to reach the peak. The people began to suspect village leaders about the compensation fund and the payment fees for the drilling points that were not felt by the people. This year, conflict began to happen, because PT GBU continued to do their activities and did not appreciate the indigenous resource owners. Conflict continues to occur, but its nature was still latent or hidden. In 2015, the nature of the conflict began to open, where people began to fight against the policies of the village leaders and PT GBU. These policies were related to plant-growing payments and compensation and labor costs. In 2015 there was also split within the society, where the society were divided into two groups, the pro-mining and the contra mining groups. Conflict continues to rise, each society group retained what they wanted and continued to fight. On October 2015, the Governor of Maluku issued IUP-OP (Mining Operation License-Production Operation) to PT GBU to continue their activities. However, this was opposed by the contra group along with a number of the society leaders and NGOs by saying that PT GBU could not perform its activities anymore, because it had polluted the environment. In addition, due to the people dissatisfaction with the management of PT GBU, the community firmly refused PT GBU to continue its activities.

In 2017, conflicts began to grow and led to physical destruction. This year, the Governor of Maluku issued a temporary closing permit for PT GBU activities again, while waiting the second study conducted by a joint team of mining inspectorate and experts team.
of Universitas Patimura. The joint study team from the mining inspectorate, environmental experts and experts team of Universitas Patimura was again revealed to conduct research, in order to verify the results of previous environmental impact studies. This was the periodization of conflict that occurred in the gold mining area of Romang Island. The Periodization of Romang Island conflict, indicates that the typology of conflict is largely determined by the time of the conflict happened. Therefore, conflicts need to be disclosed based on the time of the conflict, thereby facilitating the accommodation of the conflict to be undertaken.

The Possibility of Conflict Escalation. Basically, conflict is affected by the opposing interests between the two sides (Kriesberg, 1998). The conflicting parties will defend their interests as a truth and strive to achieve its objectives. This is what then gives rise to tension and violence between the parties in conflict. At this level, there is likely to be an escalation of conflict that has impact on the social, economic and cultural life of the community. Prayogo (2008) explains that the pattern of conflict escalation can be measured from the level of violence consisting of six levels, in two categories, namely: (1) oral categories (unrest and complaints), (2) action categories (reports, pressures, threats, to murder). The escalation of conflict is also caused by the increasing interest of each groups or parties involved in the conflict (Krisberg, 1998 and Prayogo. 2008).

Two categories of conflict escalation patterns stated by Prayogo (2008) also occurred in the gold mining area of Romang Island. Oral categories in this case unrest and complaints are part of the perceived by the Romang Island community. Complaints and anxiety are caused by three factors that comprise of (1) the difference factor of the property concept, (2) the cost of compensation and (3) the recruitment of labor. These three factors become people anxiety and complaint, since there are violations committed by the village government along with the company concerning the source of the mine (land), the unfulfilled compensation costs and the costs of compensation that are not in accordance with the wishes of the community, as well as the recruitment of local labors that is unilaterally undertaken by the village government and the company, without involving the customs leaders. The action categories in the form of reports, pressures, threats are also experienced by people who contra against PT GBU. The customs leaders are sued in relation to land disputes. There are threats given to those who are not pro-mining and they are pressured to give their lands and commodities that are the economic sources for their survival. Reports, pressures and threats experienced by communities contra mining are conducted by the stakeholders in the village and the company accompanied by the presence of the security personnels assigned to the gold mining area of Romang Island. The intimidations continue felt by the community, because they do not want to give their lands to PT GBU.

The possibility of widespreading conflict will occur if two categories of conflict escalation patterns and the factors described continue to be experienced by the community. In addition, there are other possibilities that will become new factor in the widespread of vertical and horizontal conflicts that occur in the gold mining area of Romang Island. The new factors are the creation of social class structure of the society and the weakening of community cohesiveness. These two factors will be part of the conflict escalation in Romang Island, if PT GBU continues its activities up to the stage of production, without any conflict accommodation made. The Romang Island people who contra against the mining, remain in their principle, that PT GBU should stop its activities. Because people fear their resources will be threatened and their generation will not be able to enjoy the natural resources. People still believe that nature and everything in Romang Island are gift from God Almighty, which must be preserved for their and future generations of Romang Island sake.

"This nature, God gives us to be managed for our present and future generations. Therefore, we must preserve it" (LS).

The recognition presented by LS is a hope, that the nature of Romang Island must be maintained and preserved for their present life and the future generation of Romang Island. Because, if the nature of Romang island is not maintained and preserved as well as protected from the hands of the irresponsible people, then the Romang Island generation can
not survive. Nature is not just a life of Romang Island people. Nature is the identity of life that has been inherited long time ago by the ancestors which must be preserved its sustainability. The tone of hope from the Romang Island community continues to be shouted to the stakeholders to dismiss PT GBU activities. However, the voices were not heard by the policy makers in Romang island. Complaints and anxieties felt by the community, even lead to horizontal conflicts that breaks the harmony of community life and ruins the culture and identity of the Romang Island community.

The Creation of Social Class Structure of Society. One of the factors that can lead to the escalation of conflict in the gold mining area of Romang Island is the creation of class structure of the society. The creation of this class structure, due to the access in utilizing the gold resources by each actors. Each actors tries to exert all their capabilities to get benefit from the management and the utilization of gold resources in Romang Island. The ability possessed is used to claim the source of the mining on its own and ignore the other party. Power networks are set up to gain support from the stakeholders, making it easier for the actors to access the gold resources, and ultimately creating social class in the society. The creation of social class in the society is motivated by many factors. However, the most dominant factor is the amount of capital owned and most importantly the access to the land that is the primary measure determines the class position (Breman, 1995). Similarly, Saptari and Holzner (1997) also suggest that the most important resources in the countryside are the land and the specific forms of relationships between members of different social groups. It is this land resource that generates the deferment of rural society and gives birth to a new social class. This view is in line with the community context in the gold mining area of Romang Island. The structure of social class in Romang Island society has been established since a long time ago, but with the passage of time the class structure has been reduced when the community has known education accompanied by the entry of religion. The social class distinction is no longer separator among societies, where there is mutual respect while remaining guided by cultural values.

The social class was again present, when PT GBU came with the aim to manage the gold resources in Romang Island. The society was then fragmented because of the different interests of the existing gold resources. In addition, the unilateral claims on mining resources also re-shaped the social class structure that had long ceased to prevail. The communities were divided into certain classes and the land was used as commodity to which they were opposed. Each class struggles to defend what for them was true and frequently the class group that had power in society, used its power and authority to execute the class groups that did not have power and authority in society.

The social class formed in the life of the Romang Island community, consists of three classes, namely: first, the upper class consisting of the landlord or lord of the island in this case is matarumah Orleta. Matarumah Orleta is matarumah which has full rights to the land resources in Romang Island (Jerusu, Hila and Solat villages). This Matarumah also has the right to divide Romang Island and determines who has the right to eat and drink on which land. Second, middle class consisting of mararumah Kwiatu, Larwoni and other matarumah. These two matarumah and other matarumah are the extensions of matarumah Orleta to organize the people of Jerusu and Hila. Third, the lower class consisting of migrant communities from other islands, such as Kisar Island. This class is the people who are fully under the supervision of matarumah Orleta. Each classes has different access rights to the gold and land resources of Romang Island.

The segregation of classes in the countryside and in particular the mining area will continue and make the conflict more widespread when the people who has power keep suppressing the powerless people. Furthermore, the formation of class structure and the greater distance among rural communities, are not only due to the relationship among them and their relationship to land resources, but also related to the influence of the state and mining companies (Judge, 2015). It is also suggested by Shohibuddin et.al (2010) that, the great influence on the formation of classes, occurs due to the external factors of society i.e the state with its policies and companies that come to control the land resources of the
community. This condition perpetuates the conflict in the gold mining area of Romang Island and will even have an impact on conflict escalation.

The Weakening of Community Cohesiveness. The second factor that can be the cause of conflict escalation in the gold mining area of Romang Island is the weakening of community cohesiveness. The weakening of community cohesiveness occurs as the result of the changing of social, economic and cultural conditions due to the interests of each group to the gold resources and its management. However, to know clearly the social cohesiveness of Romang Island people, it is necessary to explain first the social, economic and cultural conditions of the Romang Island people before the presence of PT GBU.

The Romang Island community was once a community that lived and was bound by nature. The natural resources on Romang Island provide many benefits to them, both onshore resources and marine resources. Considering most of the Romang Island people livelihood are as farmers and fishermen, nature is a gift to them. As a gift, nature must be kept and preserved for survival, both for present and future generations. Life sharing and helping are the basis for Romang Island community. Social, cultural, religious and economic life are established well one another, reaches to the outer village and island. It is this cohesiveness that makes the people of Romang Island far from conflict that causes them to split. The cohesiveness is built on the basis of equality without questioning the social class. Although in the past there was social class, but it did not affect massive to the life of Romang Island community, before the presence of PT GBU.

“In the past, before PT GBU came, we lived well with each other. Nobody said that he was a landlord, and had authority. We all living in Romang Island were the same” (ST and AP).

In the sense that, prior to the presence of PT GBU, the people of Romang Island lived in peace with each other. No one claimed to be a land or island owner, because everyone was the same. Social life was well-created, mutual help in building houses, creating new gardens, manifested from Rosna and Ina-nara as well as Ama-hiyali cultures practiced well. In addition, the community economy was still in the category of enough, because the utilization of the existing natural resources well and without being bothered by others. Communities freely accessed the natural resources such as firewood, timber to build houses, honey production and others for their survival, without being restricted by others. However, after the presence of PT GBU, the cohesiveness of the society was changing. Unilateral claims were made against the mining sources and the benefits of its management. At this point, there was conflict of interest by each actors or parties leading to conflict. The presence of PT GBU changed the cohesiveness of the society in various aspects of life. Mutual respect was no longer the foundation of living together. Nature that had become a blessing turned into a curse, because of the struggle over the existing resources. The tradition of helping each other was further eroded due to personal interests were preferred to the common interests. Each parties, both the pro and contra looked for solution to keep what was in their interests. If this continues to be allowed, then the possibility of the conflict escalation to the civil war can occur.

This is stated by some informants in Romang Island, especially the informants who are contra against the mining. In the interviews, it was found that, if PT GBU did not get out or leave Hila and Romang Island in general, then what happen is conflict of siblings. This recognition indicates that public resentment against village leaders, PT GBU and pro-mining communities has grown up. It is the resentment that makes the entire society who are contra against the mining get angry and decide to fight against his own brother, if PT GBU does not get out from Romang island.

CONCLUSION

The contestation among actors in the gold mining area of Romang Island, Southwest Maluku Regency occurs due to different interests regarding the management and the utilization of gold resources. The contestation of the actors, resulting in social life relationship among people in Romang Island. Each actors tries to defend their interests. The possibility of
conflict escalation to occur, if each conflicting party keeps their opinion on the issue of the mining source and the management as well as the utilization of the existing gold resources. The possibility of the existence of conflict escalation is caused by two factors, namely the the formation of the social class structure of the society and the weakening of the community cohesiveness factors.

SUGGESTIONS

The important step that must be taken in the management and the utilization of natural resources is the step of collaboration among the stakeholders. Collaboration step is done with the aim to avoid the possibility of conflict to occur, due to deviation from the management and the utilization process of the natural resources. The collaboration among these stakeholders will help the government, the private and the community in agreeing on the rules related to the management and the utilization of natural resources, such as the rights of natural resources ownership.

Prior to the issuance of the permit by the state as the highest holder of the regulation to the corporation as the manager, research must be conducted prior to the social, cultural and economic conditions of the community. This is done with the aim to know the context of the community, so that the policies taken in relation to the management and the utilization of the resources can be done by taking into account the local context of the community, so that there is not deviations that can result in extractive mining activities and also in the community activities.

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THE INSTITUTIONAL BASED FISHERIES’ RESOURCES MANAGEMENT OF AMBON ISLAND, INDONESIA

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ABSTRACT
The purpose of this study was to analyze a Sasi institutional element in the management of fisheries resources in the island of Ambon. To get the data needed, a serial of in-depth interview and library research was conducted to the participants of several customary leaders. After data collected then analyzed using a qualitative method based on the phenomenological approach. The results showed that Sesi was found that the institutional function in the management of fisheries resources has been effective functioned as follows: First, regional boundaries. institutional Sasi has clear regional boundaries. Determination of boundaries conducted through deliberations led and initiated by customary leaders. Second, the rule system of Sasi has an institutional rule and restrictions on resource management. Third, the punishment is given in the form of customs penalties, monetary fines, and confiscation of fishing gear. Fourth, institutional Sasi entitled to regulate the activities allowed and prohibited. Fifth, Sasi has authority to use of natural resources in coastal areas. Sixth, institutional Sasi has a resource monitoring mechanism that works with other parties.

KEY WORDS
Fisheries, resources, management, coastal area.

Indonesia is the largest archipelago country in the world with a coastline length of around 95,000 km, the area of seawater reaches 5.8 million km2 and about 13,492 islands. Overall the potential of coastal and marine resources is the main source of growth and support to support sustainable development (Alikodra 2012). An important aspect of fisheries management is the actors involved in the management process. These actors can be classified into 3 groups, namely government (government-based management), community (community-based management), and their cooperation (co-management). According to Satria (2015), community-based fisheries management systems recognize and consider the role of the community traditional fishermen and has long been applied in Indonesia (Satria & Matsuda 2004). Local community-based management is clearly considered capable of maintaining ecosystems and the sustainability of fishery resources (Cinner & Aswani 2007). Through local wisdom, the community sees that there are responsibilities in utilization activities, and responsible for protecting natural resources (Berkes, 2008).

One form of local wisdom in fisheries management is the institutional Sasi found in Ambon, Maluku. The Sasi is generally known as a traditional natural resource management system carried out by people in eastern Indonesia, including Maluku and Papua. The Sasi is a system of beliefs, rules, and rituals that involve temporary prohibitions on the use of resources or certain regions (Adhuri, 2013). Various studies show the degradation of Sasi institutions due to the decline of the legitimacy of local authorities and the competent leaders of Sasi institutions, as it happened in Central Maluku (Harkes and Novaczek, 2002) and Raja Ampat (McLeod, et al., 2009). Sasi has also been largely abandoned in most areas in the Kei archipelago, Maluku, except in some areas on the east coast of Kei Besar (Adhuri, 2013). Based on the description above, it is important to analyze institutional element sasi in managing resources. Based on the description of the background above, the purpose of this study is to analyze the institutional elements of sasi in managing coastal resources.
METHODS OF RESEARCH

This study used descriptive qualitative methods. This research was conducted on the island of Ambon, Maluku. The choice of location is done intentionally (purposive). Data collected includes primary data and secondary data. Primary data is obtained from observation, in-depth interviews, and focus group discussions or focused group discussions (FGD). Secondary data was obtained from the village office, the Statistic Central Agency, Ammon Fisheries, and Marine Service and previous research reports. Data analysis techniques were data collection, data analysis, data reduction, data presentation, and conclusion.

RESULTS AND DISCUSSION

Sasi is a form of traditional knowledge management based on local knowledge and wisdom. Its existence has existed from the past in the ancestral community of the island of Ambon. Historically this local wisdom system was widespread in several coastal areas of Indonesia, such as in Aceh with Panglima Laot (Mustaqim 2018), Lombok with institutional Awig-awig, and in Maluku with sasi institutions. Traditional natural resource management practices have been carried out for centuries in various communities in the world. Before the colonial government entered Indonesia, the orientation of the implementation of Sasi was aimed at protecting the community from over-exploitation activities. Post-reform of resource management is carried out through decentralization. Recognition of Sasi institutions as a mechanism for sustainable natural resource management is also driven by the surge in environmentalism that has occurred in the world and has been started since the 1980s (Zerner, 1994). The challenges of change that threaten the course of Sasi in many villages in Maluku and parts of West Papua, which are related to the commercialization, modernization, and fading of traditional values (Harkes & Novaczek, 2002). The occurrence of Sasi commercialization is also indicated by the implementation of the Sasi auction system as mentioned in (Harkes & Novaczek, 2002).

Sasi is an institution built by the community to manage fisheries resources. There are eight institutional performance indicators in resource management (Ontrom, 1990). Institutional performance indicators are regional boundaries, rules, sanctions, rights systems, authority, and supervision.

The boundary of the territory is the clarity of the regional boundaries whose criteria are containing valuable resources for the community (Satria, 2015). Regional boundaries are generally carried out by means of a straight line drawn towards the sea from the outermost land to the edge of the coral reef (Solihin 2010). Sasi has clear territory and boundaries. Determination of boundaries conducted through deliberations led and initiated by customary leaders. According to the head of the custom, the determination of management area boundaries is based on the location of the resource. Determination of regional boundaries is adjusted to the distance of the community in fishing activities. The boundary of the coastal area which is 500 meters away is measured from the coast to the sea with a length of 800 meters measured from the outermost distance towards the side. The purpose of determining boundaries is to facilitate supervision of coastal resources.

The Rules system is a shared understanding between several parties which shows strong clues about the actions that are required, prohibited or allowed (Ostrom 2011). Rules contained in the sasi are based on traditional provisions which tend to be unwritten. This rule is passed down verbally to the community. At the research location, there are rules for opening and closing Sasi. Open sasi is an activity for taking fisheries resources by the community. Sasi opening system began with a traditional ceremony. Whereas closing Sasi is an activity that signifies the end of resource extraction. The activity is carried out by the installation of the end of the opening session. When the sasi is closed, the community may only cross the designated area, it is not permissible to take the results from the area being monitored (Lestari and Satria, 2015). At present, the rules are clearer and understandable because they are made more formally in the form of village regulations.
The sanction system is a provision imposed on every society that violates the rules in utilizing resource use. In the management of fisheries resources, the application of sanctions becomes an important instrument. The most influential tool in determining the sustainability index value is sanctioned for fishermen who break the law (Chailuluddin et al., 2014). There are several types of sanctions for social sanctions (such as being humiliated or ostracized by the community), economic sanctions (fines, confiscation of goods), moral sanctions (through formal court mechanisms) and physical sanctions (Satria, 2015). These sanctions have been made in a more assertive and more repressive form than customary law in general (Witanto 2007). Giving sanctions to the community based on the level of violations committed. The form of sanction given to people who break regulations Sasi institutions can be seen in the following table 1.

| No. | Form of violation | Sanctions |
|-----|-------------------|-----------|
| 1   | Using explosives and potassium in the sasi area; | Pay a fine of IDR. 500,000 and be ostracized by the community; |
| 2   | Collecting sea products in the sasi area before opening time; | Pay a fine of IDR. 300,000, and the fishing gear is confiscated; |
| 3   | Dispose of dirt or garbage in the sasi area; | Pay a fine of IDR 50,000 and clean the place of worship (Mosque for 3 days); |
| 4   | Eliminate sanction marks intentionally; | Sanctions from nature (belief system) are in the form of possession and paralysis. In addition, sanctions from the public are public humiliation; |
| 5   | Using marine vehicles that cause noise in the area; | Pay a fine of IDR. 15,000 and clean the place of worship for 2 days; |
| 6   | Carry out fishing activities around the Sasi area. | A fine of IDR. 30,000 clears the place of worship for 3 days. |

Sanctions are given with the aim of not only providing trauma or feeling of the deterrent to the offender, but to educate the offender not to do the same. According to Kwati et al., (2014), the mechanism for giving sanctions to offenders depends on the customer leader, the punishment can be in the form of physical activities, fines, and taking fishing gear.

The rights system in this study refers to a set of ownership rights (Satria, 2009). It must support spatial certainty and incentives for management. This rights system must be able to exclude and refuse claims of benefits to unauthorized parties (Hall et al. 2011; Scott 2008). The rights system must be legitimate and effectively recognized so that it does not require additional costs to implement it. Sasi institutions have the right to regulate any activities that are permitted and prohibited in taking advantage of fisheries resources in Ambon Island. Whereas customary rights in the research location there are several rights attached to the sasi institution: 1). the right to determine the time and opening ceremony; 2). the right to determine the type of fishing gear; 3). the right to enforce sasi legal rules; (4). Auction rights; 5). the right to determine the boundaries of the sea sasi area; (6). the right to grant a business license, and (7). the right to resolve fisherman conflicts.

Authority is the legitimate power possessed by an institution to carry out its duties and functions. The authority holder is an institution formed by the community, both formal and informal, to regulate the management mechanism, creating rules, revise rules, and make decision-making mechanisms. The authority to implement the rules and customary law of the sea in Ambon was represented through the sasi institution. In running its function, sasi has an authority structure in decision making, namely the existence of a customary leader who has a role in management. The role of the head of Kewang includes decision making, as well as internal and external affairs related to sasi responsibilities. Decision making both related to internal and external affairs by kewang is carried out through the deliberation of the Deliberation led and initiated by the customary head. Decision making related to violations committed by the community is adjusted to the applicable norms and rules.

Community-based fisheries management is a process of giving authority, responsibility, and supervision to the community to manage resources by paying attention to their needs, desires, goals, and aspirations (Nikijuluw 2000). Supervision of fisheries resources is carried
out by the fishing community through the rules of the sasi institution and assisted by community social institutions. Supervision with sasi aims to see the level of public compliance with the rules and impose sanctions on violators. The oversight mechanism is carried out by reporting to customary leaders such as village heads, customary leaders and religious leaders or can immediately expel perpetrators who commit violations. Techniques in supervision carried out in the form of patrols were also carried out by the government.

CONCLUSION

Sasi is a form of common (pool) resource management practice which has been implemented for generations in Ambon island, Maluku. One of local wisdom of Maluku is known as sasi.

Sasi was a form of resources management based on local society. It has long been trusted as one of the most efficient traditional practices in maintaining the sustainability of resources in coastal areas. The results showed that Sesi was found that the institutional function in the management of fisheries resources has been effective functioned as follows: First, regional boundaries. institutional Sasi has clear regional boundaries. Determination of boundaries conducted through deliberations led and initiated by customary leaders. Second, the rule system of Sasi has an institutional rule and restrictions on resource management. Third, the punishment is given in the form of customs penalties, monetary fines, and confiscation of fishing gear. Fourth, institutional Sasi entitled to regulate the activities allowed and prohibited. Fifth, Sasi has authority to use of natural resources in coastal areas. Sixth, institutional Sasi has a resource monitoring mechanism that works with other partners.

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PHYTOPLANKTON GROWTH IN THE CONDITIONS OF MILKFISH POND CULTIVATION WITH APPLICATION OF PROBIOTICS IN EAST TEGAL DISTRICT OF TEGAL CITY, INDONESIA

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ABSTRACT
Milkfish is one of the leading aquaculture products. Shifting the demands of aquaculture production requires a probiotic mixture on feed, although the need for phytoplankton as natural food is still very much needed. This research method is a descriptive method. This study was conducted in April-June 2018 in milkfish ponds in East Tegal District, Tegal City, Indonesia. Retrieving water samples using a bottle size of 50 liters of water which is then filtered with plankton net, then the sample is preserved with 5% formalin and immediately taken to the laboratory for identification. The purpose of this study was to: (1) determine the growth of phytoplankton during the maintenance of milkfish, and (2) analyze the relationship between nutrient availability and phytoplankton abundance. The results showed that the growth of phytoplankton was quadratic, where the highest growth was achieved on day 31 of 3,135,150 individuals/milliliter, then decreased. The growth of functional phytoplankton is influenced by nitrate (NO₃), phosphate (PO₄) and total organic matter (TOM), which is indicated by the multiple regression equation $Y = 3779627 + 29580113 \times 10^{-8} NO₃ - 24740.6 TOM$ (α <0.05).

KEY WORDS
Diversity, phytoplankton, milkfish ponds, East Tegal.

Milkfish is one of the most cultivated fish commodities in Indonesia. Other than having quite high protein content of 20-24% (Hafiludin, 2015), milkfish is also used as the feed for skipjack and tuna (WWF, 2014). These two reasons show that the demand for milkfish in the market is relatively high. In 2013, the production of pond fish in Central Java reached 72,350 tons, while in Tegal City it reached 939.42 tons (BPS, 2014). This production tends to increase every year.

Milkfish cultivation in the pond has been improved in term of its technology for traditional one to semi-intensive to intensive one. Semi-intensive and intensive ponds are characterized with high stocking density and administration of additional feed as well as the addition of other production infrastructure such as windmill. In Indonesia, seed stocking density for traditional/extensive technology has concentrated disperse of 6,000 fish/ha, meanwhile Taiwan has 6,000 fish/ha and Philippine has 1,500 to 6,000 fish/ha (Fitz-Gerald 2004). Semi-intensive technology in Indonesia has stocking density between 8,000 to 12,000 fish/ha while Taiwan has more than 25,000 fish/ha (Mayunar et al. 2000) and The Philippines has stocking density of 12,000 fish/ha.

In general, pond in the north coast of Java is unproductive shrimp fond. Farmers put their life on the fishery that they turn to the milkfish cultivation with extensive to intensive cultivation patterns that require additional synthetic feed.

Feed cultivation administration practice can speed up the growth of the cultivation as well as influencing the increase in residual feed waste. One of the ways to overcome it is through probiotic application. According to Moriarty (1999) in Raja et al (2015), they define probiotic as the administration of living microbial creatures that give advantages to the health as well as improving the production.

Some milkfish farmers have innovated the production through the use of feed and probiotic, they have produced quite high amounted to ton/hectare/planting season within two
months while using around two tons of feed. Based on this production scale, this quite high production is probably because of both natural and synthetic good feed management support as well as the waters quality. The availability of this natural feed can be described in the abundance and diversity of the existing plankton in the pond.

Plankton has strategic role as the natural feed for the cultivated milkfish. In its application, the growth in the food is heavily determined by the pond rehabilitation efforts through land preparation. These efforts are intended for ensuring the suitability of nutrients so that the plankton can grow well. However, the early stage of land preparation for fish cultivation often face some struggles due to imperfection of biogeochemistry process in the base of the pond and water media. As a result of this, the feasibility of the media becomes the limiting factor for the cultural graduation that can cause the death to the culture.

This research is the search for natural potential of pond land in supporting the natural stock or growth of phytoplankton as well as the behavior and indications and environmental support of cultivation habitats other than from the administration of artificial feed. In the cultivation media support process, feed and probiotic residuals are expected to be the growth supporting factor of natural feed or for the milkfish cultivation. The purpose of this study was to: (1) determine the growth of phytoplankton during the maintenance of milkfish, and (2) analyze the relationship between nutrient availability and phytoplankton abundance.

METHODS OF RESEARCH

Material used in this research is phytoplankton in the form of water concentrate from the sampling results of filtering and some water volume. The supporting tools are glass-ware, microscope, Sedwick Rafter, refractometer, thermometer, spectrophotometry pH meter, DO meter, pH meter, plankton net and sample bottle.

The research method used is descriptive method namely research aims to provide or describe current condition or phenomenon by using scientific procedures to answer actual problems (Sugiyono, 2011).

This study was conducted on April-June 2018 in milkfish ponds in East Tegal District, Tegal City (Figure 1). This research is descriptive research describing the studied object.

![Figure 1 – Map of Research Site](image-url)
The research was conducted in the pond of 10,000 m². Before conducting the measurement, the pond has undergone a preparatory process which includes land reversal, drying, and washing of land that takes 7 days. After filling water to the depth of 0.9 m which was carried out slowly for 5 days, water sampling was carried out for phytoplankton measurement and other water qualities. When the initial measurement is denoted the measurement to 0, the measurement is continued on day 3, 10, 17, 24, 31, 38, 45, 51, 58.

The measured variables are: phytoplankton, temperature, and salinity, NO₃, NH₃, PO₄ and BOT. The measurement is carried out with 3 time repetitions respectively.

The observed variable measurement procedures are described below:

Retrieving water samples using a bottle size of 50 liters of water which is then filtered with plankton net, then the sample is preserved with 5% formalin and immediately taken to the laboratory for identification.

Quantitative analysis on the biology index is done to know the growth of phytoplankton including abundance, diversity, and the uniformity of Shannon-Wiener and its formulas are as follows:

\[ N = n \times \frac{A}{B} \times \frac{C}{D} \times \frac{1}{E} \]

Where: \( N \) = Plankton abundance; \( n \) = number of plankton per field of view; \( A \) = glass cover area (mm²); \( B \) = area of one field of view (mm²); \( C \) = volume of filtered water (ml); \( D \) = volume of one drop of water (ml); \( E \) = filtered volume (liters).

**Species Diversity Index:**

\[ H' = - \sum n_i \ln n_i \]

Where: \( H' \) = Species diversity index; \( n_i \) = Number of individual i taxa; \( N \) = Total number of individuals; \( n_i \) = Proportion of i species.

| Class          | Genus       | Average abundance of phytoplankton (ind/l) on day: |
|----------------|-------------|-----------------------------------------------------|
|                |             | 0  | 3  | 10 | 17 | 24 | 31 | 38 | 45 | 51 | 58 |
| Chlorophyta    | Chlorella   | 115000 | 451500 | 331500 | 651200 | 611000 | 635200 | 435400 | 442700 | 290300 | 399850 |
|                | Selenastrum | 0 | 2900 | 0 | 0 | 0 | 0 | 2900 | 0 | 0 |
|                | Kirchneriella | 0 | 0 | 45000 | 59250 | 25000 | 15000 | 48000 | 13500 | 7000 | 3500 |
|                | Oocystis    | 0 | 0 | 0 | 5000 | 0 | 0 | 0 | 8100 | 4050 |
|                | Chlorococcum | 2500 | 0 | 0 | 0 | 12500 | 12600 | 56450 | 13500 | 16100 | 9300 |
|                | Desmidium   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cyanophyta     | Chroococcus | 0 | 45000 | 159500 | 235000 | 80000 | 64250 | 275200 | 412500 | 236700 | 118350 |
|                | Oscillatoria | 432350 | 476570 | 577250 | 672550 | 1148750 | 729200 | 580550 | 269050 | 457150 | 412925 |
| Bacillariophyta| Amphipora   | 52500 | 57600 | 395500 | 507500 | 431250 | 700550 | 322550 | 332350 | 565350 | 389400 |
|                | Amphora     | 0 | 1250 | 98000 | 109000 | 70000 | 692500 | 212500 | 281500 | 81750 | 40875 |
|                | Cociocidiscus | 0 | 110000 | 37500 | 39000 | 32500 | 14600 | 57550 | 10000 | 12000 | 6000 |
|                | Cymbella    | 22500 | 500 | 195000 | 137500 | 156200 | 279650 | 334650 | 293950 | 65000 | 43750 |
|                | Diploides   | 13500 | 0 | 67250 | 87500 | 66200 | 278760 | 127050 | 41360 | 17900 | 15700 |
|                | Gyrosigma  | 0 | 28750 | 0 | 1500 | 0 | 17100 | 60800 | 12150 | 7000 | 3500 |
|                | Navicula    | 0 | 2500 | 127500 | 235000 | 143000 | 157450 | 167000 | 95640 | 180500 | 90250 |
|                | Nitzschia   | 13250 | 12500 | 236000 | 280000 | 139500 | 0 | 6000 | 19500 | 0 | 31105 |
|                | Cyclotella  | 15000 | 16000 | 225000 | 100200 | 112150 | 141690 | 209600 | 18000 | 58450 | 36725 |
|                | Chaetoceros | 0 | 0 | 76250 | 12000 | 34000 | 19850 | 29150 | 0 | 26750 | 13350 |
| TOTAL          |             | 666600 | 1208250 | 2526250 | 2879700 | 2941500 | 3135150 | 2904700 | 2004850 | 2030000 | 1618630 |

**Uniformity Index:**

\[ E = \frac{H'}{H'maks} \]
Where: $E = \text{Species diversity index}; H' = \text{Species diversity index}; H'_{\text{max}} = \text{Maximum diversity index}.$

Measuring temperature, salinity, pH, DO by using a thermometer, refractometer, pH meter and DO meter respectively. Meanwhile, the measurement of NO$_2$, NH$_3$, PO$_4$ and total organic materials according to SNI number 6989.79: 2011 for testing nitrate levels, SNI number 06-6989.30-2005 for ammonia levels, SNI number 06-6989.31-2005 for phosphate levels and SNI number 06-6989.22-2004 for total organic matter levels.

Regression analysis with the help of SPSS series 23 software is carried out in order to determine the growth of plankton, changes in water quality and their relationship.

**RESULTS AND DISCUSSION**

The presence of phytoplankton in milkfish ponds is closely related to the condition of the pond where nutrients come from the rest of the feed and the results of cultural metabolism. The types of phytoplankton during the study are listed in Table 1.

Based on the results of the quantity analysis of phytoplankton as presented in the table above, the growth pattern in milkfish cultivation ponds is shown in Figure 2.

![Figure 2 – Growth of Phytoplankton during Maintenance of Milkfish](image)

Based on the measurement results of phytoplankton, the growth has two types, namely increasing from the beginning of the study to the 31st day and decreasing from the 31st day to the 58th day. The highest abundance is 3,135,159 ind/l. The initial growth equation was $Y = 1133405 + 77153.15 \times (r = 0.904) \ (\alpha <0.05)$, while the rate of decline was $Y = 4952460 - 58605.2 \times (r = 0.95) \ (\alpha <0.05)$.

Diversity index and phytoplankton uniformity in milkfish pond are presented in table 2.

| Time (Day) | Diversity | Uniformity |
|-----------|-----------|------------|
| 0         | 0.998     | 0.480      |
| 3         | 1.364     | 0.531      |
| 10        | 2.300     | 0.896      |
| 17        | 2.094     | 0.793      |
| 24        | 1.876     | 0.692      |
| 31        | 2.015     | 0.763      |
| 38        | 2.364     | 0.873      |
| 45        | 2.013     | 0.743      |
| 51        | 2.005     | 0.740      |
| 58        | 1.917     | 0.691      |

Based on the above table, it can be seen that the diversity range ranges from 1,364 to 0,998, while the uniformity index ranges from 0,480 to 0,896.
Water qualities measured in this study were: temperature, pH, salinity, DO, nitrate, ammonia, orthophosphate and BOT. The results are presented in table 3.

Temperature variations tend to be stable on each measurement ranging from 28.00 to 33.80°C. The degree of acidity (pH) shows that the pH range is from 7.57 to 8.05, with the lowest pH on day 51 and the highest on day 24.

Salinity in milkfish pond ranges from 10 to 18 ppt, where the lowest salinity is on day 3 and 10 and the highest is on day 45 and 51.

Oxygen solubility (DO) tends to be stable in the range of 2.1 ppm to 4.73 ppm where DO is lowest on day 3 and highest on day 51.

Table 3 – Measurement of water quality parameters

| Day of | Temperature | pH  | DO  | Salinity |
|--------|-------------|-----|-----|----------|
| 0      | 32.30       | 7.70| 4.10| 12       |
|        | 31.80       | 7.69| 3.80| 12       |
|        | 32.40       | 7.70| 4.00| 12       |
| 3      | 30.02       | 7.73| 2.60| 10       |
|        | 30.10       | 7.67| 2.10| 10       |
|        | 30.07       | 7.72| 2.50| 10       |
|        | 30.02       | 7.73| 2.50| 10       |
| 10     | 30.10       | 7.68| 3.80| 10       |
|        | 33.80       | 7.73| 4.20| 10       |
|        | 32.00       | 7.82| 3.80| 12       |
|        | 32.88       | 7.75| 4.00| 12       |
|        | 31.67       | 7.76| 4.20| 12       |
| 17     | 28.50       | 8.05| 3.16| 12       |
|        | 28.40       | 8.01| 4.50| 12       |
|        | 29.30       | 7.70| 4.00| 12       |
| 24     | 28.91       | 7.85| 3.30| 15       |
|        | 29.20       | 7.89| 4.40| 15       |
|        | 29.01       | 7.79| 4.20| 15       |
| 31     | 30.01       | 7.97| 4.46| 16       |
|        | 29.71       | 7.84| 3.40| 16       |
|        | 31.80       | 7.84| 3.30| 16       |
| 38     | 28.00       | 7.76| 3.60| 18       |
|        | 28.90       | 7.82| 3.70| 18       |
|        | 29.30       | 7.78| 4.10| 18       |
| 45     | 33.40       | 7.72| 4.73| 18       |
|        | 32.20       | 7.60| 3.28| 18       |
|        | 32.70       | 7.57| 3.57| 18       |
| 51     | 28.92       | 7.70| 4.40| 16       |
|        | 29.71       | 7.67| 3.90| 16       |
|        | 28.48       | 7.65| 3.30| 16       |

Figure 3 – State of Nitrate (NO₃⁻) during Maintenance of Milkfish
The nitrate content in ponds ranges from 0.03 ppm to 0.129 ppm and has a tendency to decrease in line with the maintenance life.

![Figure 4 – State of Phosphate (PO₄) during Maintenance of Milkfish](image)

Phosphate content in pond ranges from 0.008 ppm - 0.063 ppm and the amount decreases with the maintenance life.

![Figure 5 – The Condition of Total Organic Materials during Maintenance of Milkfish](image)

Total Organic Material in Figure 5 shows that the total Organic Material range is from 22,385 to 47,753 and its content tends to increase with the maintenance life.

![Figure 6 – Relationship between Total Nitrate, Phosphate and Organic Ingredients](image)

The relationship between nitrate (NO₃), phosphate (PO₄) and total organic material (TOM) to plankton abundance has a very strong correlation that is \( r = 0.854 \), while the high
determination coefficient value is $R^2 = 0.730$, with the equation $Y = 3779627 + 29580113 NO_3 - 1.1 \times 10^{-8} PO_4 - 24740.6$ TOM ($\alpha<0.05$). This analysis explains that phytoplankton will grow on the increasing nitrate ($NO_3$). The reverse pattern is shown by phosphate ($PO_4$) and total organic material (TOM).

**DISCUSSION OF RESULTS**

The number of plankton increases as the period of enlargement increases; this is related to the increase in metabolic waste and feed in the pond which as the energy source for plankton. The number of plankton increased from the beginning of the activity until the 31st day, ranging from 666,600 - 3,135,150 individual/milliliter. According to Case et al, 2008 in Nasrullah, 2018, the increase in nutrients that enter the pond affects the composition and density of phytoplankton in the waters.

On the 31st day until the end of the study, the number of plankton began to decrease from 3,135,150 individual/milliliter to 1,618,630 individual/milliliter. It is probably due to the large circulation of water and the reduced amount of nutrients in the water. According to Klemeneie et al. (2007) that the main factor influencing phytoplankton community structure is a change in the condition of coastal waters including pond caused by tide and season. Reduction of phytoplankton throughout the maintenance period is also possible because of the predation process of cultivated animals in which milkfish are herbivore fish that need natural feed in addition to artificial feed in the growing process. According to Triyanto et al, 2014, the main feed of milkfish consisting of phytoplankton (35.2-56.42%) and zooplankton (12.22-42.8%).

Diversity index analysis is used to determine the diversity of species of aquatic organisms. Diversity index ranged from 1,364 - 2,364 indicating that the condition of the waters is moderate. According to Michael, 1994 the value of the diversity index ($H'$): $1.0 < H' < 3.0$ is moderate diversity which means that pond water quality is relatively good to support the development of the plankton community. High species diversity values are usually used as the clue for a comfortable and stable environment. Meanwhile, low values indicate a volatile environment (Nybakkken, 1992 in Khaerunnisa, 2015).

The uniformity index value in this study ranges from 0.480 - 0.896 where the uniformity value is low to high. The high uniformity index indicates that the individual spread of each type is relatively uneven. According to Ali (1994), if the value of $E > 0.75$ then the value of uniformity is high or good, whereas if the value of $E < 0.75$ then the value of uniformity is low.

Water quality in the waters will affect the quality of life of the biota in it. Good water quality can support the growth, development and survival of fish. Thus, the management of water quality must be considered. One of the indications of the water quality is plankton.

The measured water quality parameters are DO, pH, temperature and salinity. Every living thing has a different tolerance limit to the environment. The limits of tolerance of living organisms to pH vary. They are influenced by, among others, temperature, dissolved oxygen, alkalinity, type of organism and place of life (Astuty, 2002).

Dissolved oxygen (DO) shows the amount of dissolved oxygen contained in water expressed in mg/L. Oxygen in the waters comes from photosynthesis from phytoplankton or other types of aquatic plants as well as through the process of diffusion from the air (APHA, 2005). The DO content in this study ranged from 2.1 mg/L - 4.73 mg/L. DO level fluctuates daily and seasonally depending on mixing and movement (turbulence) of water masses, photosynthetic activity, respiration and waste (effluent) that enters the body of water. In addition, higher temperature and salinity decreases oxygen solubility. Thus, oxygen level at sea tends to be lower than oxygen level in freshwater (Niklitschek & Secor, 2009).

The pH value is the result of measuring the activity of hydrogen ions in water and showing a balance between acid and alkaline water. Carbonate, hydroxide, and bicarbonate will increase the alkalinity of water. Meanwhile, the presence of free mineral acids and bicarbonate acid increases acidity (Furtado et al, 2011). During the study the pond pH range was 7.57 - 8.05 where this range is still within the normal range for aquaculture activities as well as the life of plankton. Biological activities such as photosynthesis and respiration of...
organisms, and the presence of ions in the waters affect the pH value. Xu et al. (2010) stated that waters with a pH between 6–9 are waters with high fertility and are classified as productive because they can encourage the process of demolition of organic matter in waters into minerals that can be utilized by phytoplankton for growth.

Milkfish is euryhaline with a wide salinity tolerance range of 0-157 ppt. The proper salinity for milkfish growth is 5-35 ppt (SNI 5005: 2014). Measured salinity ranges from 10-18 ppt where the salinity is suitable for milkfish cultivation. According to Peter (1979) in Widiyanti (2017), salinity is one of the physical factors that can affect the rate of growth of biota and its feed consumption.

The average temperature of pond samples observed was 28.00 - 33.8 °C which is still in the optimum temperature range for phytoplankton growth. Astuty (2002) and Isdarmawan (2005) stated that the temperature range to support the growth of phytoplankton ranged from 20-30 °C, while Crossetti & Bicudo, 2005 stated that Chlorophyceae and diatoms would grow well in a range of temperatures of 30-35 °C and 20-30°C. Rianto (2008) added that temperature directly influences the rate of various metabolic processes in microalgae cells. The rate of metabolic processes will increase with increasing temperature. The optimum rate of metabolic processes can be achieved at a temperature range of 24-31°C (Darmono, 2001).

The nitrate content in ponds ranges from 0.03 ppm to 0.129 ppm and has a tendency to decrease in line with the maintenance life. The range of each value is still feasible as a medium for pond culture. According to Effendi (2003), nitrogen nitrate content of more than 0.2 mg/L can result in eutrophication of waters.

Phosphate content in pond ranges from 0.008 ppm - 0.063 ppm and the amount decreases with the maintenance life. Phosphate content in natural waters ranges from 0.005 to 0.020 mg/L, although the phosphate range value is higher than the content of the phosphate range in natural waters but still below the threshold of SNI 8005: 2014 which is less than 10 ppm.

The accumulation of organic matter or Total Organic Matter (TOM) is probably due to the low dissolved oxygen and decomposing bacteria in the waters. The increase in the content of organic matter is caused by the remaining feeding and excretion from the organism in line with the increasing maintenance period. The research results in the field of the range of total organic ingredients were 22,385 - 47,753 mg/liter. According to Reid (1961), waters with a total organic matter content above 26.0 mg/L are classified as fertile. However, it should have not exceeded the standard quality threshold set by the State Minister of Population and Environment Decree Number 2 of 1988 concerning Quality Standards Wastewater, which is equal to 80 mg/L. The variation in the content of total organic ingredients can affect the diversity of phytoplankton.

Figure 7 – Multiple regression of the effect of nitrate on phytoplankton abundance
The relationship between nitrate, phosphate and total organic material to plankton abundance has a very strong correlation, namely $r = 0.854$, while the high coefficient of determination indicates that the availability of organic matter is proportional to the growth of phytoplankton, $R^2 = 0.730$. The multiple regression equation of the relationship is $Y = 3779627 + 29580113 \text{NO}_3 - 1.1 \times 10^{-8} \text{PO}_4 - 24740.6 \text{TOM}$ ($\alpha < 0.05$) with a value of $F = 0.0384$. The results of multiple regression equations show that nitrate, phosphate and total organic materials together have a significant effect as indicated by an $F$ value of less than 0.05 for the abundance of phytoplankton. Nitrates, phosphates and total organic matter as nutrient elements play an important role in the level of water fertility. A pond waters are said to be fertile if there are many primary producers, namely phytoplankton, both in quantity and quality as a source of natural food and also act as producers of oxygen through photosynthesis (Setyobudiandi et al, 2009).

Multiple regression equations also show that phosphate partially has a positive effect on plankton abundance whereas nitrate partially does not significantly influence. The effect of nitrate is shown in figure 7.

The amount of nitrate in pond waters is quadratic with the equation: $Y = -109x^2 + 2.108x - 2.106$, where as much as 0.07 nitrate content shows the maximum value of the number of phytoplankton in the pond.

The nutrient content decreased in the middle of the maintenance period does not indicate that nutrient elements are reduced in the water. However, it indicates the process of phytoplankton predation by cultivated animals. In line with the increasing period of maintenance, milkfish requires more food and phytoplankton is a food that is usually eaten by milkfish in its natural habitat.

Milkfish are plankton-eating fish that obtain their food by filtering water from their environment using long and tight gill filters (Coad 2015).

**CONCLUSION**

The results of the study showed that phytoplankton growth was quadratic with the equation $Y = -109x^2 + 2.108x - 2.106$, where the highest growth was reached on day 31 of 3,135,150 individual/milliliter, then decreased.

The growth of functional phytoplankton is influenced by nitrate ($\text{NO}_3$), phosphate ($\text{PO}_4$) and total organic material ($\text{TOM}$) as indicated by multiple regression equations $Y = 3779627 + 29580113 \text{NO}_3 - 1.1 \times 10^{-8} \text{PO}_4 - 24740.6 \text{TOM}$ ($\alpha < 0.05$).

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IMPROVING SOCIETY EMPOWERMENT OF TRADITIONAL OIL MINERS AT OLD WELLS OF WONOCOLO

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ABSTRACT
The issue of this research is related to the variables which are affecting the empowerment of the traditional oil miners of old wells in Wonocolo, Bojonegoro, East Java of Indonesia. The aim of this research is to analyze the influence of the variables of physical, human and social capital also the ability of empowerment actors towards the variable of society empowerment. Research design of this study is descriptive analytic which is expected to provide an explanation of the phenomenon of community empowerment process and to direct various government policies related to behavioural aspects of empowerment actors. The data used are primary data, collected using survey method through questionnaire. Regression analysis technique is used to analyze the data. Research findings show that there are significant influences of the four variables towards society empowerment. The most dominating variable towards society empowerment is the social capital variable, while the ability of empowerment actors has the lowest influence towards society empowerment. The implementation of the results is that empowerment needs the development of human, social, and physical capital and it will be better if the empowerment is supported by the development of empowerment actors’ ability. It is expected that the government of Bojonegoro can support the implementation of society empowerment. Thus, it can increase the society income especially for the traditional oil miners of old wells.

KEY WORDS
Community empowerment, physical capital, human capital, social capital, empowerment.

Bojonegoro, East Java, Indonesia is gifted with marvelous nature richness potentials. Wonocolo is one of the regions in Bojonegoro with the oil mining area that now is still developed and managed using traditional method. This region is located approximately 60 km from the center of Bojonegoro city and it is closed to the border of Blora, Central Java (Local Government Mid-term Development Plan, 2013). TeksaS, Wonocolo is selected and proposed as geosite in Petroleum Geoheritage Bojonegoro, since in this place there are rocks that represent the system of petroleum and there is a traditional oil mining in old wells made by the Netherlands in their colonization era. The previous research conducted by Kussujaniatun (2017) shows the importance of improving the social interaction, accountability, integrity, empathy, and motivation in improving the society empowerment. It is expected that those factors can improve the economics of the region. The goal is to create independents individuals and society, including the independence in their way of thinking, act, and controlling what they are doing. Society with their high empowerment is the societies that are physically and mentally healthy, educated and strong and possessing intrinsic values that become the source of their empowerment, such as the virtues of togetherness and cooperation (Zubaidi, 2013). The miners do the mining process using traditional method by utilizing the cars” machines and logs from teaks. The top of Wonocolo anticline is located 450m above the surface of the sea, while the shallowest drilling is around 200m from the top of the fold. Besides its location that is similar to the location of oil mining in Texas, America, now the location of TeksaS in Wonocolo has served as the educational tourism. There is Rumah Singgah (rest area) that serves as learning center about oil and its exploitation in Wonocolo. Besides, there is also adventure tourism using Jeeps around this region (Society and Village Empowerment Department of Bojonegoro, 2014).

The numerous tourism potentials should be in line with the development of the society
that must be able to utilize all the potentials and develop them into their leading products of the region. It is expected that from the products created, Wonocolo is not only famous for its Tekasas, but also for its tourism potentials and the prominent souvenirs offered, such as oil souvenirs and miniatures from the teaks” logs. However, the problem is that right now not many people try to develop the potentials, and this is supported by the research result by Anis Sri Hartati (2017) that the performance of the oil miners to utilize the old wells cannot be fully expected to support their finance and to improve their prosperity. Society empowerment needs to be done, not only to make the society aware of the potentials in their region, but also to enable them to try to use the potentials as a way to improve the economics of the society and the region, which can be started by creating small business. Based on research result conducted by Kesi Widjajanti (2011), physical capital and human capital are significant aspects in society empowerment. The research’s interest is related to the variables influencing the empowerment level of the society and the formulation of the empowerment model based on the condition of the location. The objective of the research is to analyze the influence of the physical capital, human capital, social capital, and the ability of the actors towards the society empowerment. It is expected that based on the results of this research together with the government especially the local government of Wonocolo, the society empowerment can be improved.

MATERIALS AND METHODS OF RESEARCH

The results of the previous research conducted by Kussujaniatun (2016) are 1) tourism potentials mapping in Margomulyo, Bojonegoro; the high tourism potential of teaks” roots shows that there is a need to develop the local wisdom and harmonization between the visitors and the nature, 2) teaks” roots potential mapping; the mapping shows the high nature potential of the superior commodity of the teaks” roots products and the lengthy marketing distribution. Society empowerment is an effort to build the society’s own attraction by encouraging, motivating, and arousing their awareness of the potentials that they have, as wells as developing the potentials (Theresia, Aprililia, 2014). Society empowerment can be realized by active participation from the society that is facilitated by the existence of the actors of the empowerment. The main target of the society empowerment if those who are weak, having no power or ability to access the productive resources, or those who are left behind in their development.

The final goal of the society empowerment process is to make the society independent, so that they can improve the finances of their family and optimize the resources that they have (Kesi Widjajanti, 2011). Besides, it can be done by involving the women as well, so that the women can support the improvement of their families” finances. The research about women empowerment has been done by Kussujaniatun (Kussujaniatun, 2014).

Based on some definitions about empowerment suggested above, then it can be concluded that basically, empowerment is a process and an effort to obtain or to give the power or ability to the individuals and the weak society so that they can identify, analyze, and set their needs and potentials, as well as the problems that they face, and then choose the options of the solutions by optimizing the resources and potentials independently. The research variables consist of physical capital, human capital, social capital, and the ability of the empowerment’s actors. Physical capital is the facilities or assets used as the tools and the main supports in conducting a process, such as buildings, roads, equipment, machines, and so on. The indicators of the physical capital are: (a) facilities in farming production, (b) facilities and infrastructures in education, (c) facilities and infrastructures in health, (d) facilities and infrastructures in economics, and (f) facilities and infrastructures in transportation. Human capital is the assets related to the ability to do certain activities. The indicators of the human capital are: (a) education level, (b) health rate, and (c) ability to build interactions among people. Social capital is the norm or values understood by the society that can strengthen the positive social network or work network, in terms of realizing the goal to create the social value. The indicators shown by asking questions related to the existence of (a) social network or work network, (b) trust level among people, (c) obedience to the
norms, (d) care of others, and involvement in social organization activities. Empowerment actors’ abilities are the abilities of the actors of the empowerment that are expected to be able to empower the society. The abilities include (a) knowledge/ cognitive, (b) affective, (c) psychomotor skills. Society empowerment is the power and the ability of the society to identify the potentials and the problems and then choose the options of the solutions independently. The indicators of the empowerment are (a) the ability to make decision, (b) independency, and (c) the ability to create businesses for the future (Kesi Widjajanti, 2011).

The research design is descriptive, and it is expected to explain the phenomenon of the society empowerment. The type of data used in this research is primary data that is obtained directly by distributing questionnaires. The samples of the research are 197 traditional oil miners in Wonoccolo. The variables of the research are dependent variable of society empowerment, and independent variables including physical capital (X1), human capital (X2), social capital (X3), and the ability of the empowerment actors (X4). The research employs Multiple Linear Regression technique to analyze the data. It is one of the statistical analyses commonly used to analyze the influence of two or more variables. According to Drapper & Smith, regression analysis can be used to analyze data and take the meaningful conclusion of the dependency relationship between independent and dependent variables in the form of equation (Drapper & Smith in Rahmadeni, 2014).

![Research Framework](image)

**RESULTS AND DISCUSSION**

The description result of this research shows that the respondents, who are the traditional oil miners, are mostly male (81.2%) and 73% of them are in the range of 34-60 years old with the education level of Junior high school (59%) and elementary school (31%).

The availability of the physical capital such as facilities and infrastructures for productions, education, health, economics, communication, and transportation is sufficient to support the activities of the miners (20.06%). The condition of human capital such as education level, health rate, and the ability to build interaction among others is still low (19.4%). The condition of the social capital of the miners is high (27, 3%), in which they work together, trust each other, are obedient to the norms, care of each other, and are involved in social organization activities in their surroundings. Meanwhile, the ability of the actors of the empowerment is still low (15, 7%) since their cognitive knowledge, affective behavior, and psychomotor skills are still insufficient. Most of the miners living in the mining area are still less empowered (17, 4%).

To find out whether there is influence between the independent variables, which consist of physical capital (X1), human capital (X2), social capital (X3), and actors’ ability (X4), and the dependent variable of society empowerment (Y), the Multiple Regression Test is conducted. The coefficient values of the regression are presented in Table 1.

The result of the regression test (Table 1) shows that the variables of physical capital, human capital, social capital, and actors’ ability have positive influence toward the empowerment level of the society.
Table 1 – Regression Coefficient Value between independent variable X and dependent variable Y

| Model | Unstandardized Coefficients | Standardized Coefficients | t  | Sig. |
|-------|----------------------------|---------------------------|----|------|
|       | B  | Std. Error | Beta |      |      |
| (Constant) | .983 | .776 |     | 1.267 | .207 |
| KP | .115 | .033 | .233 | 3.520 | .001** |
| MM | .117 | .050 | .185 | 2.358 | .019* |
| MS | .228 | .055 | .341 | 4.136 | .000*** |
| MF | .136 | .074 | .112 | 1.824 | .070* |

Source: Analysis result of the primary data.
Note: *significant at a 0.05; ** very significant at a 0.01.
KP - actors' ability; MM - human capital; MS - social capital; MF - physical capital.

It can be concluded that all of the independent variables influence the dependent variable that can be seen from the significance value and beta coefficient. The higher availability and condition of the physical capital, human capital, social capital, and actors' ability are, the higher empowerment level of the society will be. The equation of the regression is as follows:

\[ Y = 0.207 + 0.001X1 + 0.000X2 + 0.019X3 + 0.070X4 \]

Based on the regression model, it can be explained that in improving the empowerment level of the society, the stakeholders, especially the government need to regularly develop the involvement of the society in improving the physical capital, human capital, social capital, and actors' ability in empowerment. The high physical capital, human capital, social capital, and actors' ability will automatically increase the society empowerment. However, based on Table 1, the significance level of the actors' ability is still less significant. It means that the influence of this variable does not influence significantly to the society empowerment of the miners of the old wells in Wonoccolo, Bojonegoro.

Social capital has the dominant role in empowering the society, and therefore there is a need to maintain the social capital. Social capital consists of (a) social network or work network, (b) trust level among people, (c) obedience to the norms, (d) care of others, and involvement in social organization activities.

The variable of physical capital has positive influence on the variable of society empowerment. It can be seen from Table 1 that shows the interaction value of 0.136. It means that if the physical capital is increased, it will strengthen the society empowerment. Physical capital can be improved by repairing and improving the facilities and infrastructures in productions, education, health, economics, communication, and transportation that support the activities of the miners, so that eventually they will support the society empowerment.

Human capital has positive influence on society empowerment. It can be seen from Table 1 that shows the value of human capital is 0, 117. It means that if the human capital is improved, it will strengthen the society empowerment. Human capital can be improved by developing the education level, health rate, and the ability to build interaction among the miners. Therefore, the better human capital is, the better society empowerment process will be.

Social capital has positive influence on society empowerment. It can be seen from Table 1 that shows the value of social capital is 0, 228. It means that if the social capital is increased, it will strengthen the society empowerment. Social capital needs to be maintained especially to build the social network, improve cooperation, trust to each other, be obedient to the norms, care of each other, and be involved in social organization activities. Therefore, the higher social capital they have, the more empowered the miners will be.

Actors' ability has positive influence on society empowerment. It can be seen from Table 1 that shows the value of actors' ability is 0, 115. It means that if the actors' ability is improved, it will strengthen the society empowerment. The actors' abilities that need to be improve include the miners' cognitive knowledge, affective behaviour, and psychomotor skills. Therefore, the better actors' abilities are, the society will be more empowered.
CONCLUSION

This topic is crucial to be discussed in a research since it is expected that the society of Wonocolo understand well that there are many potentials in their region. The potentials do not only include the traditional oil mining, but also the tourism potentials that can serve as educational tourism. This condition may not occur in anywhere else. Therefore, the society is expected to be able to utilize the potentials in their region that is similar to the oil location in Texas, America. Thus, Teks in Wonocolo becomes the educational tourism that serves as learning center about oil and how to exploit it. Besides, there is also adventure tourism to go around the region by Jeep.

The performance of the oil miners by reusing the oil wells cannot be fully expected to improve the economic condition of the miners’ families. Therefore, the miners of the old wells in Wonocolo must be aware of the numerous tourism potentials that should be developed. They have to be able to utilize and develop the tourism potentials and create superior products of their region. Thus, society empowerment needs to be conducted. One of them is by conducting business training for the old wells miners so that they can increase their income.

Based on the result and discussion, it shows that:
- The variables of the physical capital, human capital, social capital, and actors’ ability have positive influence toward the society empowerment;
- Social capital is the most dominant variable in influencing the society empowerment;
- Actors’ ability is the least leading variable since its influence has less significance to the society empowerment.

It is expected that from this research result, the local government of Bojonegoro can cooperate with the society in Wonocolo to improve the society empowerment.

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ABSTRACT
Industry mapping and need assessment are the initial steps in developing industry sector. This research aims at illustrating the industry performance, mapping the potentials of industry development and identifying need assessment of industry in Kepuh Kulon, Bantul, Yogyakarta. The data are obtained from survey method using questionnaires and Focus Group Discussion. The analysis conducted is descriptive statistics analysis. The research results show that there are 30 entrepreneurs of belinjo crackers business and 44 entrepreneurs of the other industries such as bricks, sewing, silver, embroidery, bakery, flour milling, and rice milling. Even though the small businesses have established for years, most of the industries still do not have proper business operation management, from administration and finance aspects to production and marketing aspects. The results of the need assessment show that trainings for administration documentation, financial statement reporting, product innovation, packaging technique, marketing technique, and waste management are needed to improve the capacity of the businesses.

KEY WORDS
Mapping, industry, performance, assessment.

Based on the data from the Central Bureau of Statistics, the economic growth result in Indonesia for the first quarter in 2018 is 5.06%. This number is higher than the economic growth in quarter 1 in 2017 (year on year), which is 5.01%. Similarly, the small businesses growth rate in 2012-2013 is 24.803 with the increase of 3.94% (Central Bureau of Statistics, 2018).

In Indonesia, besides playing role in developing the infrastructure and economics, small businesses units also contribute in solving the problem of unemployment. It is easy for small businesses to provide vacancies for job seekers. Therefore, the government pays more attention to the small and medium businesses to maintain the economic condition in Indonesia. Small and medium industries sector has strong endurance to survive against the economic crisis and monetary crisis. Supervision and protection for small and medium businesses are very strategic to produce added sufficient value since the number of the businesses unit is adequate. Therefore, small businesses mapping is necessary to be conducted. Furthermore economic empowerment for the sub-urban society is expected to be done based on the capacity. This is because small industries play important roles in development and economic growth (Warsiki, 2012).

One of the small and simple regions of small industries is in Kepuh Kulon. It is a strategic location to build small industries. Kepuh Kulon is well known as the center of emping industries in Bantul, Yogyakarta. Therefore, Kepuh Kulon has been appointed as the representative of the regions with the productive society both in regional and national scale. It is found out that in Kepuh Kulon, the industries are not just emping industries.

There are other small home industries, such as bricks, rice milling, flour milling, embroidery, sewing, and many others. Thus, Kepuh Kulon is a potential region for small industries. As stated by Kussujaniatun and Kismantoroaji (2017) in their research, it is expected that the society find out and realize that in their region there are many potentials that can be utilized. Therefore, there is a need to study the aspects of social improvement and economic growth in influencing the entrepreneurial behavior. The research shows that
there is an influence of social improvement and economic growth on the entrepreneurial behavior (Kussujaniatun, 2017).

Industry mapping and need assessment are the proper ways as initial steps to develop industry sector in increasing the economic growth of the society. Business capacity improvement can be conducted by identifying the need assessment of each existing industry so that the appropriate policy can be made for the development of the industries.

The interest of the research is to find out the performance, mapping, and need assessment of the entrepreneurs of the small industries. It is expected that by having the understanding about the mapping of the small industry potential in Kepuh Kulon, the results of need assessment can be implemented to increase the capacity of the businesses.

MATERIALS AND METHODS OF RESEARCH

Small industries play role in creating job opportunities, expanding employment for urbanization and providing needs flexibility and innovation in economics in general. In crisis moments in Indonesia, both economic crisis and monetary crisis, small industries are able to show their existence to survive and even tend to expand (Fafurida and Dyah Maya Nihayah, 2011).

According to Tri Wahyu Rejekiningrsih (2004) small industries include all companies or businesses that turn raw materials into semi-finished materials or turn goods with less value into good with higher values. In addition, Mudrajat Kuncoro (1997) also states that small industry still use traditional technology and simple financial system. This is in line with what has been done by the people in Kepuh Kulon, in which there are still some entrepreneurs of belinjo crackers who still maintain the production process using traditional or manual tools.

Related to small businesses, there are several special criteria as stated by Sutojo, et al (1994) in Baswir (1998):

- More than half of small companies are established as the development of small businesses;
- Besides facing capital problems, other problems faced by small business arise along with the business development level;
- Most of the small businesses are unable to fulfill the administration requirements to obtain loans from banks;
- Almost 60% of small businesses still use traditional technology;
- Almost half of small companies just use less than 60% of capacity;
- Market shares of the small businesses tend to decrease due to lack of capital, low technology and low managerial system;
- 7 Almost 70% of small businesses conduct their marketing directly to the consumers.

One of the regions for small and simple industries that has been realized is in Kepuh Kulon. Kepuh Kulon is one of the strategic regions to build small industries. Kepuh Kulon has been known as one of industry center for emping or belinjo crackers in Bantul regency. According to the research conducted by Kussujaniatun and Kismantoroaji (2017), it is expected that the society identify and realize that in their region there are many potentials that should be developed. Therefore, there is a need to study about the social development aspect and economic improvement. Another research done by Kussujaniatun (2016), it shows that Bojonegoro regency is one of the cities with the potential to develop creative industries and tourism village. In facing business competition, creativity and innovation are necessary.

Small and medium business industries play important role in economic development and growth. Generally, small business industries open more job vacancies, and contribute more to earn better income. Small business industries tend to take more employees. This can be seen from the fact that around 99% of the business units in Indonesia are of small and medium business industries. It is noted that they are able to create job vacancies for 99, 4 million employees. Meanwhile, big industries only take 2, 8 million employees (Ministry of Cooperative and Small and Medium Enterprises, 2010). Therefore, this can help Indonesia to
improve the welfare of its citizen and to survive in monetary crisis moments. It can be stated that the small business industries have big roles and contributions for the economics in Indonesia in the form of giving opportunity to help people work as employees.

The method used in this research is survey method by using questionnaires via interviews, focus group discussions and observations for the respondents. The type of data in this research is primary and secondary data. The secondary data obtained are related to the small business industries in Kepuh Kulon, while the primary data are obtained directly from the respondents. In line with Sesotyaningsih, Mega & Manaf (2015) which is conduct the observation and interviews with the local community using literature and institution survey. The respondents in this research are all of the entrepreneurs in Kepuh Kulon, Bantul, Yogyakarta.

The analysis used is descriptive statistics analysis. The description of the performance of each industry will give illustration on how the industries run for all this time. Thus, it can be identified what has been done and what has not been done by the industries. The industry mapping is useful to see the grouping of each type of the industry. Along with Vitasurya (2015) this research emphasizes the involvement of the target as an active subject, making their experience as an integral of research, finding problems, and solving problems by targeting the empowerment context of the research subject.

Meanwhile, need assessment is used to identify things needed by the industries to improve their business capacity. There are three aspects evaluated in need assessment stage. The three aspects include administration, production, and marketing. The framework of this research is described in Figure 1, and it is expected that it can explain the performance of the small business industries. The small business industry mapping and need assessment are the initial steps in identifying what things needed to improve the business capacity.

![Research Framework](image)

**Figure 1 – Research Framework**

**RESULTS AND DISCUSSION**

Research results show that there are 8 types of small industries. There are 74 entrepreneurs of the small business industries in Kepuh Kulon, Bantul that become the respondents of this research. Most of them are the entrepreneurs of emping industry as many as 30 persons. Most of them are women (71%) and 75% of them are in the range of 40-65 years old with the education level of elementary school (60%) and junior high school (25%).

From the 74 entrepreneurs of the small business industries, there are some of them who have established the industries for 25-40 years, and most of them deal with emping/belinjo crackers industries as many as 30 entrepreneurs. It shows that the business climate in Kepuh Kulon is remarkable. The industries that have been running for years are expected to give positive effects to the development of the region.

Even though some industries have run for years, most of them are still not well managed. This can be seen from the administration documentation. Most of the industries still do not have administration documentation of their businesses. This condition shows that they still do not understand the importance of administration documentation for a business.
Similarly, those industries still do not apply financial reports for their business. The poor documentation both for administration and for financial report may occur due to the low education level of the owners of the industries. From the research result, 60% owners are the graduates of elementary school, 5% did not even graduate from elementary school, 25% are the graduates of junior high school, and 10% are the graduates of senior high school. These facts cause the lack of knowledge about documentation of a business.

Most of the business capitals in the industries are taken from private capital. Only a few owners get more business capital by having loans from the banks to expand the businesses. This is caused by several reasons. First, they are afraid of being unable to pay the credits since they worry they cannot pay the installment each month. Their low level of education makes them never think of expanding their business to be more advanced. The second reason why the entrepreneurs do not want to borrow some loans from the banks is that because of the difficulty to get loans from the banks or other financial institutions. This is because they cannot fulfill the administrative and technical requirements asked by the banks. The most difficult requirement that they need to fulfill is about collaterals. Not all of the owners have sufficient property or assets to serve as collaterals to secure the loans. Most of the industries are home business industries, and therefore it is normal if they do not have sufficient assets or property.

The monthly profit for each business industry in Kepuh Kulon ranges from five to fifteen million rupiah. There are also some industries with more than fifteen million rupiahs, but they are only less than 6% of the total industries in Kepuh Kulon.

Business assets owned by most entrepreneurs in Kepuh Kulon are very small. This occurs since most of the industries are home-based industries with small profit.

Seen from the types of the production tools that they use, most of the small business industries still use simple tools. This is because of the limited knowledge of the owners about the effective and efficient technology that can be applied nowadays. Therefore, there is a need to supervise and to direct them about the use of effective and efficient technology so that the productivity of the industries in Kepuh Kulon can increase.

The number of the employees in each industry is also minor, which is less than 5 employees. That number includes the owner and relatives who help to run the business. This is because the home industries are family industries that are conducted from generation to generation. From the research result, it can be seen that the limited quality of the human resources both from formal education and from knowledge and skills really influence the business management. Thus, it is difficult for the businesses to improve and grow optimally since the people are hard to adopt the advance of the new technology to increase their product competitiveness.

Most of the small business industries in Kepuh Kulon are emping business. The 30 emping entrepreneurs also still employ simple packaging technique. The simple product packaging technique is still done manually. As a result, the appearance of the packages is still not in its optimum look. Marketing is a crucial aspect that becomes the significant factor of the success of a business. Networking is the main key of the marketing success (Simmons Geoff, 2008). The product marketing technique of the industries is still simple and does not use advance technique, which is merely by word of mouth. Most of them still cannot sell their own products, but they sell it with the help of collectors. There are only four business industries that are able to sell their own products to the consumers. Right now, there has not been innovation both in the packaging process and in marketing system. The product quality itself still cannot fulfill the market demand. For example, most of the emping business industries do not create innovation on the taste variations and shape variations of the emping/belinjo crackers. There are only two entrepreneurs of emping industries who start to produce emping with three taste variations of salty, sweet, and spicy with two shapes of triangle and square.

After identifying the performance of the industries in several aspects, there is a need to conduct guidance, training, and knowledge transfer as well as business supervision for the entrepreneurs of the industries. It can also be stated that the performance of most small business industries in Kepuh Kulon is still low.
The minimum knowledge about business development strategy shows that there are many things that should be done to maintain the industries. The performance of the industries must be improved by conducting business management training, efficient and effective technology application, and business supervision especially in conducting differentiation for emping or belinjo crackers in terms of creativity and innovation of the taste and shape of the emping. This indicates that the trainings for the entrepreneurs is important so that the business industries can compete in increasing the price of the creative products and in making innovation in product designs (Kussujaniatun, 2009a). With those efforts, it is expected that the industry performance can increase and eventually will improve the welfare of the people.

The small businesses industries are mapped based on the type of the industries. Each industry in Kepuh Kulon has different condition and distribution. Most of the industries are emping industries, and they form a cluster in Kepuh Kulon. There are also industries of cassava crackers/emping and cassava and tubers flour milling with the neighboring locations. Besides, there are industries of bricks, silver, and embroidery with a bit distant locations from the emping industries. Meanwhile, rice milling industries are spread out in the center of Kepuh Kulon. Things to do in improving the business capacity are the trainings for making administration documentation, reporting financial statement, product tools innovation, packaging technique, marketing technique, getting business capital, getting easy access for raw material, and managing waste.

The following is the discussion of each industry profile based on the industry type in Kepuh Kulon.

Most of the industries in Kepuh Kulon are emping industries. There are 30 emping industries in this village, and it is expected that the products can have higher market value.

There are no documentations for administration and finance. For all this time, the entrepreneurs never record the production cost that they spend, income they get, and their productivity in producing the emping. This is due to the poor knowledge about bookkeeping.

In terms of production, the raw materials used in production process are taken from around Kepuh Kulon. However, most of them admit that they have trouble in obtaining raw materials, both from the availability and from the fluctuate price.

The tools that they use for production process are just simple tools. In producing the crackers/emping, they just utilize simple manual tools so that the production is less optimal. The average employees for the production process are less than five persons, and all of them are from Kepuh Kulon.

Most of the problems that they face deal with capital and technology in the production process especially technology in sautéing process of the crackers. In addition, they also have problems in their simple management system that lead to unidentified loss and profit. Besides, they also have no skills in using the technology as media to market their products.

Traditionally, the emping industries are given from generation to generation. Until now, most all of the people still preserve the tradition to maintain the emping industries. How ever, it is inevitable that inheriting this industries for the next generation is not easy. For product packages, they still use simple packaging. They do not know yet about labelling the products and making interesting packages. In marketing aspect, they also use simple marketing. They have never done promotions to sell their products. Their products are sold only by word of mouth.

In Kepuh Kulon, there are two businesses of rice milling. The large farming area in this region leads to the rice production. Therefore, the rice milling industries are established.

Seen from the distribution, the locations of the rice milling industries spread out in the center of Kepuh Kulon. The two rice milling industries enable the local farmers to process their production results.

Seen from the administration aspect, of the five rice milling industries, there are only two that conduct the documentation both for the administration and for the finance. However, the documentation or the bookkeeping itself still cannot fulfill the good standard of bookkeeping. This occurs due to the poor knowledge about the importance of proper bookkeeping.
Seen from production aspect, the business profit of these industries are relatively big. The average profit of the two rice milling industries may reach five up to fifteen million rupiahs per month. This shows that the businesses are potential and need to be maintained. The tools used in these businesses are considered to be modern since they have used rice milling machines. The employees are around six persons and all of them are from Kepuh Kulon. There is no difficulty in terms of marketing, since they do not need to do promotions. The rice farmers will directly come to the rice milling industries to process their harvest results. Therefore, the farmers do not need to work hard on the marketing.

There are 15 industries of bricks in Kepuh Kulon. The existence of clay in this region enables the establishment of these industries. Based on the research result, it is found out that most of the bricks industries still do not have documentation or bookkeeping both for the administration and for the finance. The average profit is around one up to five million rupiahs per month.

The tools used for the production process are simple. For the drying process, they still depend on the sun shine. Therefore, in the raining season, the production results of the bricks tend to decrease. For the marketing technique, they just depend on the consumers who come to buy the bricks. It is unfortunate that these industries still have many limitations. Therefore, there is a need for the practitioners or academician to help maintaining their existence.

There are 8 industries producing silver accessories in Kepuh Kulon. Kepuh Kulon is well known for its emban akik (akik ring) made of silver. The products are neat and have great quality with cheaper price compared to the products in other regions. The production cost is around fifty up to ninety five thousand rupiahs, depending on the complexity of the design and the materials used. The production process of the akik takes 1-2 weeks. Besides producing emban akik, the industries also produce wedding rings.

The profit ranges from five to fifteen million rupiahs per month. The tools used in the production process are still simple. It is necessary for the expert of product design to give training for the employees so that the designs of the silver accessories can be more varied. The marketing technique that they use is still simple as well.

There are four industries of embroidery in Kepuh Kulon. Most of the products of the embroidery industries are clothes and prayer dresses with certain threads and motives.

The price is determined by considering the size, motives, types of threads, and soldering. The tools are still minimum, such as rulers, scissors, soldering tools, and simple embroidery machine.

The profit ranges from five to ten million rupiah per month. The employees for the production process are less than five persons and all of them are from Kepuh Kulon. They haven’t done any documentation both for administration and for finance. Until now the marketing technique is still simple, only by word of mouth.

There are four locations of bakery industries in Kepuh Kulon. The types of the cake that they produce are keto basah/wet cake (moist and soft cakes) and keto kering/dried cake (cookies). Wet keto include lemper, appam, keto rissoles, keto mangkok (cake bowl), keto beras/rice keto, and keto cucur. Dried keto include keto kuping gajah, untir-untir, keto kacang telur (egg and peanut), keto nastar, astar, and ampyang. The profit of the bakery is around two hundred thousand rupiahs per day or five until ten million rupiahs per month.

The employees for the production process are less than five persons and all of them are from Kepuh Kulon. Until now, they haven’t done any documentation both for administration and for finance. The product packaging technique is still simple. Similarly, the marketing technique is still simple, only by word of mouth without any promotions to sell the product.

There is one industry producing tubers and cassava flour in Kepuh Kulon. The tubers and cassava flour include taro flour, sweet potato flour, cassava flour, carrot flour, pumpkin flour, arrowroot flour, suweg flour, jicama flour, banana stem flour, and others. They produce flour from any possible and available raw materials. The tools used in the production process are also simple. In production process, the raw materials used are taken in Kepuh Kulon and
outside Kepuh Kulon. In the process, they just use simple manual tools, and therefore the results are not optimized.

The profit ranges from five to ten million rupiahs per month. For product packaging, they simply package the products in simple way. They don’t know yet about labeling and proper packaging technique. The marketing technique is still simple, only by word of mouth.

There are 10 sewing business industries in Kepuh Kulon. The productions really pay attention to the neat sewing and the clothing designs. Those become the leading advantage of the sewing industries in Kepuh Kulon. The entrepreneurs really maintain the quality of their products. However, the sewing machines that they use are still simple. The employees for the production process are less than five persons and all of them are from Kepuh Kulon. The profit ranges from five to ten million rupiahs per month. Until now, they haven’t done any documentation both for administration and for finance.

The result of Focus Group Discussion with the owners of the businesses and the data analysis in Kepuh Kulon show that there is some information about things needed by each industry group in Kepuh Kulon to improve their business capacity.

After identifying the need assessment of each industry, follow up is needed in the form of further research about the empowerment of the society. The expectation is that if the need assessment is fulfilled, then the business capacity will be improved and eventually will increase the contribution of small business sector in Kepuh Kulon.

CONCLUSION

There are some potential for the development of 8 small business industries in Kepuh Kulon, including: belinjo crackers/emping, bricks, sewing, silver, embroidery, bakery, rice milling, and tubers and cassava flour milling. Most of the people in the community conduct the business of belinjo cracker production. There are 74 entrepreneurs of the small business industries and most of them (30 people) are the entrepreneurs of emping industry. It shows that the businesses done in Kepuh Kulon run well. It is expected that the eight small business industries, especially emping business, which has established for long, can give positive effect to improve the business capacity.

Based on their performance, most of the business industries still run without proper business management. This can be seen from several aspects that show that most of the industries in Kepuh Kulon aren’t able to manage their business well and still do not have proper administration and financial documentation. The low education level of the owners of the industries is the cause of the poor financial and administration documentation. Based on the research result, 60% of the business owners in Kepuh Kulon are the graduates of elementary school. Most of the business owners in Kepuh Kulon use their own capital as the business capital. There are only a few of them who make loans to the bank to get business capital to expand their business. The average profit of the emping businesses is around five until fifteen million rupiahs per month, while the other eight business obtain five until ten million rupiahs per month as their profit. Most of the business industries still use simple production tools and simple product packaging technique. Similarly, they still also apply simple product marketing technique. Each industry in Kepuh Kulon has different condition and location distribution.

Most of the industries are emping business industries. Those industries form cluster pattern so that they are in the neighboring locations. In addition, there are also industries of bricks, silver, and embroidery with distant location from emping industries. Besides, there are also industries of bakery, flour milling, and rice milling spread out in the center of Kepuh Kulon.

Based on the performance of the industries in those aspects, it can be stated that the performance of most industries in Kepuh Kulon is still low. Many things must be done to maintain the business industries due to the minimum knowledge about business development strategy. The performance of the industries must be improved by conducting business guidance, trainings, effective technology application, and business supervision.
The needs to improve the business capacity include trainings for administration documentation, financial statement reporting, production tools innovation, packaging technique, marketing technique, business capital, easy access of raw material, product innovation, and product waste management. With those training, it is expected that the industries' performance will improve and eventually will improve the welfare of the society. Based on the result of need assessment in each industry, there is a need to follow up the results both in the form of conducting research and in the form of giving service to the society. It is expected that if the need assessment is fulfilled, it can improve the business capacity in each industry, and eventually will increase the income of the society, and surely it will improve the contribution to the industry sector acceptance in Kepuh Kulon.

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NEW METHOD OF CRITERIA WEIGHTING FOR SUPPLIER SELECTION

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ABSTRACT
In the future, researchers focusing on supplier selection are likely to use a combination of multi-criteria decision-making (MCDM) methods. The analytical hierarchy process (AHP) is often used in such combinations. The function of the AHP method in MCDM is criteria weighting. When there are a relatively large number of participants involved in an evaluation judgment, it is difficult to obtain consistent opinions. In such cases, the AHP is a useful method to obtain consistent opinions over time by repeatedly conducting pairwise comparison matrices. This study proposes a new methodology to resolve such problems. In the proposed method, the decision maker assesses the level of contribution of each criterion to the selection of suppliers. Using the proposed method, comparing the contributions of these criteria to supplier selection will always produce a consistent value. The advantage of the proposed method is that decision makers do not have to assess the degree of importance of each individual criterion. So, if there are n criteria, the decision maker has to access as much as n times. The results of this study indicate that the proposed method consistently produces a solution, without the need for repeated human judgements and without consideration of the number of criteria.

KEY WORDS
Analytic hierarchy process, comparison matrix, criteria, consistency ratio, AHP weighting.

In the selection of suppliers, companies generally have various criteria to consider. Usually, if one criterion is considered more important than other criteria, then this criterion is given greater weight. Problems arise when a supplier has to be selected based on a number of criteria [1]. In the future, researchers in the supplier selection field are likely to use a combination of methods of MCDM [2, 3]. One MCDM method that is often used in such combinations is the analytic hierarchy process (AHP) [4, 5]. Therefore, the success of the combination method is determined by AHP weighting [6].

AHP weighting can be considered valid (i.e., to have produced a consistent solution) if the consistency ratio is less than 0.1 [7, 8]. The validity of AHP weighting is determined based on the consistency of the resulting pairwise comparison matrix [9]. In such cases, the ranking or weighting of criteria is based on the judgement of the decision maker [10]. The decision maker have to do (repeat) until the pairwise comparison matrix is consistent. Therefore, the role of human judgment of decision makers is very important in supplier selection using the AHP method.

As the number of criteria increases, human judgments become increasingly sensitive and may become inconsistent [7]. It may be difficult to obtain consistent results when the size of the matrix is relatively large [11] or when there are more than seven criteria [12]. According to the literature, the optimum number of criteria is seven or fewer [13]. Thus, most supplier selection studies use the hierarchical method when there are multiple criteria [14]. However, the latter cannot guarantee consistent results, mainly due to inconsistency in human judgment. To address the aforementioned issues, this study proposes a new method to aid human judgment and ensure consistent decision making. The basic idea underpinning the proposed method is that decision makers are not required to draw comparisons between criteria. As noted above, the higher the number of criteria, the greater the risk of confusion among decision makers.
MATERIALS AND METHODS OF RESEARCH

Much research has focused on overcoming inconsistencies of pairwise comparison matrices using the AHP method. The simplest and most widely performed method involves the use of hierarchical criteria (i.e., AHP criteria weighting), in which criteria are separated into different groups [15-17]. The weakness of the hierarchical method is the extended calculation time of any guarantee of consistency if the number of major criteria or sub-criteria exceeds seven.

Besides the hierarchical method, researchers have described other methods to overcome inconsistencies of pairwise comparison matrices [18, 19]. The crisp value of each criterion is included in the pairwise comparison matrix using Eq (1). In Eq (1), if the $L_p$ and $L_q$ values are equal, then the element $a_{ij}$ in the pairwise comparison matrix is 1. $L_q$ and $L_p$ represent the value of the importance of criteria $q$ and $p$. If the value of $L_p$ is greater than that of $L_q$, then the element $a_{ij}$ in the pairwise comparison matrix is $L_p - L_q + 1$. If the value of $L_p$ is smaller than that of $L_q$, then the element $a_{ij}$ in the pairwise comparison matrix is $1/(L_p - L_q + 1)$. Inconsistency often occurs because the interval of the comparison value between the criteria is very large. Using equation $(L_p - L_q + 1)$, the pairwise comparison matrix will be consistent.

$$
a_{ij} = \begin{cases} 
1, & \text{if } L_p = L_q \\
\frac{L_p - L_q + 1}{L_p - L_q + 1}, & \text{if } (L_p - L_q) > 0 \\
\frac{1}{L_p - L_q + 1}, & \text{if } (L_p - L_q) < 0 
\end{cases} \tag{1}
$$

Table 1 shows a comparison of the scales of Saaty [8] and Li et al. [19]. Replacing the crisp values (1, 3, 5, 7, and 9) with decimal numbers and the reverse comparison, in which $r_p=1/r_q$ with $r_p=1-r_q$ is expected to minimize inconsistencies. Disadvantages of the modified scale of Li et al. [19] is not produces accurate results.

| Scale [8] | Scale [19] | Value | Definition |
|-----------|------------|-------|------------|
| 1         | 0.5        | Equally important | Criterion $i$ and criterion $j$ are equally important |
| 3         | 0.6        | Moderately more important | Criterion $i$ is moderately more important than criterion $j$ |
| 5         | 0.7        | Strongly more important | Criterion $i$ is much more important than than criterion $j$ |
| 7         | 0.8        | Very strongly more important | Criterion $i$ is very much more important than than criterion $j$ |
| 9         | 0.9        | Extremely more important | Criterion $i$ is extremely more important than criterion $j$ |
| 1/3; 1/5; 1/7; 1/9 | 0.1; 0.2; 0.3; 0.4 | Reverse comparison | If criterion $a_i$ is compared with criteria $a_j$ and a judgment matrix $r_j$ is obtained, then the judgement matrix of $a_i$ and $a_j$ as is follows: $r_p=1/r_q$ (8) $r_p=1·r_q$ (19) |

The consistency ratio in AHP is obtained first by calculating the eigenvalue maximum [20]. The consistency index is obtained by nine stages in Figure 1. Figure 1 shows the stages of the AHP. More details on the process can be found elsewhere [8, 21].

In Figure 1, $a_i$ denote the importance assigned to different criteria ($i$ and $j$), $n$ is the number of criteria, $W_i$ indicates the relative weight of criterion $i$. CI is the consistency index, and CR is the consistency ratio. The CR is a probability measure that the matrix is filled randomly. Thus, the CR value is the ratio between the current matrix and question and answer matrix [22]. For example, $a_{12}$ denotes the importance of criterion $C_1$ as compared with that of $C_2$. This matrix aims to determine the relative importance levels of supplier selection criteria. Matrix $N_i$ contains normalized $a_{ij}$ values. The data from this matrix is as an input into a relative weight matrix. The content of matrix $W$ is the result of calculating the relative
weights of each criterion. In terms of the value $W_i$, the greater the value assigned to the weight of a criterion, the more this criterion is prioritized by the decision maker. The evaluation matrix $E_i$ and sum matrix $V$ are the first two stages in obtaining the CI. To generate an evaluation matrix, $E_i$, each element in matrix $a_{ij}$ is divided by the weight of the criteria $w_i$. To obtain the sum matrix $V$, the elements of the evaluation matrix $E_i$ that are in the same row are summed. The consistency index can be obtained after calculating the eigen vector. The eigen vector is the weight of each element used for prioritizing elements at the lowest hierarchy level. After determining the consistency of the index, the results are compared using a random consistency index for each $n$ criterion. To ensure the validity of decision making, the consistency ratio should be $\leq 10\%$ [22].

If a decision maker considers criterion $C_2$ to be highly important than criterion $C_1$ and criterion $C_3$ to be highly important than criterion $C_2$ then criterion $C_3$ to be highly important than criterion $C_1$. If $C_2 > C_1$ and $C_3 > C_2$, then $C_3 > C_1$. Thus, $C_3 < C_1$ is not possible. As shown in Appendix 1, using only three criteria, AHP will always yield an inconsistent value if pair-wise comparison matrix is inconsistent in the comparison of supplier selection criteria. Essentially, the higher the number of criteria, the higher the inconsistency. This problem can be resolved by assigning importance value to the determination of criteria. If each criterion has a fixed value, then the value assigned to the supplier selection criteria will always be fixed and consistent. If these conditions are met, then the results will always be consistent, regardless of the number of criteria.

In the proposed method, decision makers are asked to assess the level of importance (contribution) of particular criteria to supplier selection. Based on the assessment of the decision maker, supplier selection is adjusted to the level of the contribution of each criterion.
Table 2 shows the contribution values and importance assigned to various criteria in supplier selection. Comparison of the criterion values of the decision maker results in a pairwise comparison matrix. The difference between the original AHP and the proposed method is illustrated in Figure 2. The stages of the generation of the pairwise comparison matrix using the proposed method are shown in Figure 3.

### Table 2 – Values and importance assigned to various supplier selection criteria

| Contribution level | Definition                        |
|--------------------|----------------------------------|
| 1                  | Weakly or slightly important     |
| 2                  | Important                        |
| 3                  | Moderately important            |
| 4                  | Very moderately important        |
| 5                  | Highly important                |
| 6                  | Very highly important           |
| 7                  | Very very highly important       |
| 8                  | Extremely important             |
| 9                  | Very extremely important         |

Notes:
- $a_{ij}$: Contribution level of criteria $C_i$ to supplier selection.
- $x_i$: Weight of criteria $C_i$.
- $W_i$: Weight of criteria $C_i$.
- $X_i$: Importance of each criteria when compared to other criteria.
- $X_{ij}$: Importance of each criteria when compared to other criteria.
- $a_{ij}$: Contribution level of criteria $C_i$ to supplier selection.
- $X_i$: Importance of each criteria when compared to other criteria.
- $a_{ij}$: Contribution level of criteria $C_i$ to supplier selection.
- $X_i$: Importance of each criteria when compared to other criteria.

**Figure 2 – Basic idea of the proposed method**

**Stage 1:**
- Decision maker provides an assessment of the criteria.
  - Purpose of this stage: level of contribution of each criteria
  - Usage for the next stage: as a basis for comparative value scoring among criteria

**Stage 2:**
- The value of comparison between criteria
  - Purpose of this stage: Importance of each criteria when compared to other criteria
  - Usage for the next stage: as input for pairwise comparison matrix

**Stage 3:**
- Pairwise comparison matrix
  - Purpose of this stage: To make it easy to use in AHP
  - Usage for the next stage: as an input for the calculation of the weight of criteria

**Figure 3 – Stages of the proposed method**
The difference between the proposed model and the original AHP lies in the process of generating the pairwise comparison matrix. In the original AHP, decision makers are required to compare one criterion against another. The results of each comparison are then included in the pairwise comparison matrix. This matrix is not necessarily consistent. In the proposed model, the decision maker assigns the level of importance (contribution value) of each criterion in supplier selection. Based on these values, a matrix pairwise comparison is generated.

**DISCUSSION OF RESULTS**

The performance of the proposed method. We assumed that there were nine criteria \( (C_1, C_2, C_3, \ldots, C_9) \), where the level of contribution was \( x_1, x_2, x_3, \ldots, x_9 \) and \( x_i \in \{1, 2, 3, \ldots, 9\} \). Based on a comparison of the criteria, \( C_1 \) and \( C_2 \) were assigned a value of 1 and 2, respectively. Criteria \( C_2 \) and \( C_1 \) were assigned a value of 2. The values of the comparisons among the other criteria were obtained using the same calculation. Furthermore, we calculated the weight of each criterion and its consistency ratio. The results of the weight calculation and the consistency ratio, as well as the pairwise comparison matrix, are presented in Table 3.

| Criteria | \( C_1 \) | \( C_2 \) | \( C_3 \) | \( C_4 \) | \( C_5 \) | \( C_6 \) | \( C_7 \) | \( C_8 \) | \( C_9 \) |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| \( C_1 \) | 1.00   | 0.50   | 0.33 | 0.25 | 0.20 | 0.17 | 0.14 | 0.13 | 0.11 |
| \( C_2 \) | 2.00 | 1.00 | 0.67 | 0.50 | 0.40 | 0.33 | 0.29 | 0.25 | 0.22 |
| \( C_3 \) | 3.00 | 1.50 | 1.00 | 0.75 | 0.60 | 0.50 | 0.43 | 0.38 | 0.33 |
| \( C_4 \) | 4.00 | 2.00 | 1.33 | 1.00 | 0.80 | 0.67 | 0.57 | 0.50 | 0.44 |
| \( C_5 \) | 5.00 | 2.50 | 1.67 | 1.25 | 1.00 | 0.85 | 0.71 | 0.63 | 0.56 |
| \( C_6 \) | 6.00 | 3.00 | 2.00 | 1.50 | 1.20 | 1.00 | 0.86 | 0.75 | 0.67 |
| \( C_7 \) | 7.00 | 3.50 | 2.33 | 1.75 | 1.40 | 1.17 | 1.00 | 0.88 | 0.78 |
| \( C_8 \) | 8.00 | 4.00 | 2.67 | 2.00 | 1.60 | 1.33 | 1.14 | 1.00 | 0.89 |
| \( C_9 \) | 9.00 | 4.50 | 2.33 | 1.75 | 1.80 | 1.50 | 1.29 | 1.13 | 1.00 |

If \( x_1 < x_2 < x_3 < x_4 < x_5 < x_6 < x_7 < x_8 < x_9 \), then \( x_1 = 1, x_2 = 2, x_3 = 3, \ldots, x_9 = 9 \). If criteria \( C_9 \) are compared with the other criterion, the consistency ratio will always result in a value greater than 1, as shown in Table 3 (row \( C_9 \)). Thus, the pairwise comparison matrix of \( C_9 \) criteria with other criteria gives consistent results. As the decision maker assigned \( C_1 \) the highest value (i.e., weakly or slightly important), the paired comparison value of criteria \( C_7 \) versus that of other criteria will always be less than 1. Therefore, \( C_9 \) will have the greatest weight. Likewise, the reverse is true for criteria \( C_7 \). Thus, if criteria \( C_1 \) is compared with the other criteria, it will always result in a value less than 1 and never more than 1, as shown in Table 3 in the second row (row \( C_1 \)). Thus, the pairwise comparison matrix of criteria \( C_1 \) with other criteria gives consistent results. As the decision maker assigned \( C_1 \) the lowest value (i.e., lowest importance), the paired comparison value of criteria \( C_9 \) versus that of other criteria will always be greater than 1. As a result, \( C_9 \) will have the lowest weight. In terms of the other criteria, their weights will be in accordance with the order of the contribution value. Thus, it is logical that the weight of each criterion is determined by its contribution to supplier selection. Therefore, if each criterion makes the same contribution to supplier selection, it will have the same weight. Although all the supplier selection criteria have same value, the weights of all the criteria have the same value, as depicted in Table 4.

The contribution level of a particular criterion can be further evaluated by assigning a value of 0 to 100 (integer number), where 0 indicates no contribution to supplier selection, and 100 indicates the highest contribution (importance) of a criterion to supplier selection. The advantage of using contribution levels between 0 and 100 is the broad scope it gives decision makers to input the value of contributions of various criteria to supplier selection. In addition, if we use only an integer value range between 1 and 9, and there are more than...
nine criteria, then some criteria will have the same contribution level. However, if we use an integer value range between 0 and 100, this will minimize the chances of multiple criteria being assigned the same contribution value (level of importance).

Table 4 – Performance of the proposed method using same contribution value

| Criteria | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 |
|----------|----|----|----|----|----|----|----|----|----|
| 1        | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 2        | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  |
| 3        | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  |
| 4        | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  |
|           |    |    |    |    |    |    |    |    |    |
| Contribution level | 5 | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  |
| 6        | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  |
| 7        | 7  | 7  | 7  | 7  | 7  | 7  | 7  | 7  | 7  |
| 8        | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  |
| 9        | 9  | 9  | 9  | 9  | 9  | 9  | 9  | 9  | 9  |
|           |    |    |    |    |    |    |    |    |    |
| Weight    | 0.111 | 0.111 | 0.111 | 0.111 | 0.111 | 0.111 | 0.111 | 0.111 | 0.111 |

CR 0.000 (consistent)

Testing the proposed method using data from the literature. The proposed method was tested using previous data in which there were nine selection criteria [23, 24]. The pairwise comparison matrix in one study was inconsistent [23], whereas that in the other was consistent [24]. Tables 5 and 6 show the results of assessing the different contribution levels of decision makers for different criteria. As apparent in these tables, the proposed method yielded a consistent pairwise comparison matrix in the presence of more than nine criteria. Thus, the resulting supplier selection criteria will always be valid, regardless of the number of criteria. The proposed method was also capable of making inconsistent pairwise comparison matrices consistent and providing a definitive solution to supplier selection.

Table 5 – Example 1

| Criteria | [23] | Weight | Contribution level (1-9) | Weight | Contribution level (0-100) | Weight |
|----------|------|--------|--------------------------|--------|---------------------------|--------|
| C1       | 0.291| 9      | 0.181                    | 60     | 0.327                     |
| C2       | 0.229| 8      | 0.161                    | 25     | 0.136                     |
| C3       | 0.114| 7      | 0.141                    | 22     | 0.120                     |
| C4       | 0.114| 7      | 0.141                    | 20     | 0.109                     |
| C5       | 0.036| 3      | 0.060                    | 12     | 0.065                     |
| C6       | 0.037| 3      | 0.060                    | 8      | 0.044                     |
| C7       | 0.036| 3      | 0.060                    | 7      | 0.038                     |
| C8       | 0.068| 5      | 0.100                    | 15     | 0.082                     |
| C9       | 0.052| 4      | 0.076                    | 10     | 0.052                     |
| C10      | 0.023| 1      | 0.020                    | 5      | 0.027                     |
| CR       | 0.184 (inconsistent) | 0.022 (consistent) | 0.003 (consistent) |

Table 6 – Example 2

| Criteria | [24] | Weight | Contribution level (1-9) | Weight | Contribution level (0-100) | Weight |
|----------|------|--------|--------------------------|--------|---------------------------|--------|
| C1       | 0.165| 9      | 0.176                    | 60     | 0.191                     |
| C2       | 0.135| 8      | 0.156                    | 45     | 0.144                     |
| C3       | 0.111| 6      | 0.117                    | 32     | 0.102                     |
| C4       | 0.092| 4      | 0.078                    | 28     | 0.089                     |
| C5       | 0.080| 4      | 0.078                    | 25     | 0.080                     |
| C6       | 0.078| 4      | 0.078                    | 24     | 0.077                     |
| C7       | 0.052| 2      | 0.039                    | 15     | 0.048                     |
| C8       | 0.059| 2      | 0.039                    | 18     | 0.057                     |
| C9       | 0.076| 4      | 0.063                    | 23     | 0.065                     |
| C10      | 0.104| 6      | 0.117                    | 30     | 0.096                     |
| CR       | 0.008 (consistent) | 0.012 (consistent) | 0.003 (consistent) |
Comparison of the proposed method with that of Li et al. [19]. We compared the performance of the proposed method with that of Li et al. [19] using data from previous studies [23, 24]. In the pairwise comparison matrix of Hruska et al. [23], the method by Li et al. [19] does not accommodate numbers other than 1, 3, 5, 7, and 9. Thus, number 8 is placed between numbers 7 and 9, number 6 is placed between numbers 5 and 7, and number 4 is placed between numbers 3 and 5. Figure 4 shows the results of the pairwise comparison conversion using the method of Hruska et al. [23] and that of Li et al. [9]. As shown in Figure 4, the pairwise comparison matrix based on the method of Li et al. [19] is inconsistent. Although the method used by Li et al. [19] can minimize inconsistencies, when there are more than seven criteria. This is one of the weaknesses of the method [19].

| Hruska et al. [23] | Li et al. [19] |
|-------------------|---------------|
| C1  | C2  | C3  | C4  | C5  | C6  | C7  | C8  | C9  | C10 | C11 | CR | Weight |
| 1.00 | 3.00 | 5.00 | 5.00 | 7.00 | 8.00 | 6.00 | 6.00 | 5.00 | 5.00 | C1  | 0.50 | 0.60 | 0.70 | 0.70 | 0.80 | 0.85 | 0.85 | 0.75 | 0.70 | 0.70 |
| 0.33 | 1.00 | 5.00 | 5.00 | 7.00 | 8.00 | 6.00 | 6.00 | 5.00 | 5.00 | C2  | 0.40 | 0.50 | 0.70 | 0.70 | 0.80 | 0.85 | 0.85 | 0.75 | 0.70 | 0.70 |
| 0.20 | 0.20 | 1.00 | 0.33 | 5.00 | 6.00 | 7.00 | 5.00 | 3.00 | 4.00 | C3  | 0.30 | 0.30 | 0.50 | 0.40 | 0.70 | 0.75 | 0.80 | 0.70 | 0.60 | 0.65 |
| 0.20 | 0.20 | 3.00 | 1.00 | 4.00 | 3.00 | 7.00 | 5.00 | 1.00 | 5.00 | C4  | 0.30 | 0.30 | 0.60 | 0.50 | 0.65 | 0.60 | 0.80 | 0.70 | 0.50 | 0.50 |
| 0.14 | 0.14 | 0.20 | 0.25 | 1.00 | 4.00 | 2.00 | 0.20 | 0.14 | 3.30 | C5  | 0.20 | 0.20 | 0.30 | 0.35 | 0.50 | 0.65 | 0.30 | 0.20 | 0.40 | 0.60 |
| 0.13 | 0.13 | 0.17 | 0.33 | 0.25 | 1.00 | 5.00 | 0.20 | 0.33 | 3.00 | C6  | 0.15 | 0.15 | 0.25 | 0.40 | 0.35 | 0.50 | 0.70 | 0.30 | 0.40 | 0.60 |
| 0.13 | 0.13 | 0.14 | 0.14 | 5.00 | 2.00 | 1.00 | 0.33 | 3.30 | 3.00 | C7  | 0.15 | 0.15 | 0.25 | 0.20 | 0.20 | 0.70 | 0.30 | 0.50 | 0.40 | 0.60 |
| 0.17 | 0.17 | 0.20 | 0.20 | 7.00 | 5.00 | 3.00 | 1.00 | 1.00 | 3.00 | C8  | 0.25 | 0.25 | 0.30 | 0.30 | 0.80 | 0.70 | 0.60 | 0.50 | 0.50 | 0.60 |
| 0.17 | 0.13 | 0.14 | 0.14 | 3.00 | 3.00 | 1.00 | 1.00 | 1.00 | 3.00 | C9  | 0.25 | 0.15 | 0.20 | 0.20 | 0.60 | 0.60 | 0.60 | 0.50 | 0.50 | 0.60 |
| C10 | 0.20 | 0.20 | 0.25 | 0.20 | 0.33 | 0.33 | 0.33 | 0.33 | 1.00 | C10 | 0.30 | 0.30 | 0.35 | 0.30 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.50 |
| CR  | 0.29 | 0.23 | 0.11 | 0.11 | 0.04 | 0.04 | 0.04 | 0.07 | 0.05 | 0.02 | Weight | 0.14 | 0.14 | 0.11 | 0.07 | 0.07 | 0.07 | 0.09 | 0.08 | 0.08 |

Figure 4 – Li et al. [19] for example 1

Example 2 provides additional evidence illustrating the disadvantages of the method of Li et al. [19]. Thus, the matrix data of by Polat et al. [24] must be rounded first, and then the matrix must be converted using the Li et al.’s method [19]. Figure 5 show the results of the pairwise comparison conversion using the method of Polat et al. [24] and that of Li et al. [9]. As can be seen in this figure, in a matrix that contains more than seven criteria, Li et al.’s method [19] produces an inconsistent solution. Table 7 provides a comparison of the results obtained using the method of Li et al. [19] with those obtained using the proposed method. Based on this table, it can be seen that the proposed method is better than that of Li et al. [19] because it always produces a consistent value. The proposed method is capable of giving a CI value close to zero and a value of zero if the matrix is perfectly consistent [25].

Comparison of the proposed method with that of Chandavarkar and Guddeti [18]. The performance of the proposed method was compared with that of Chandavarkar and Guddeti [18]. Chandavarkar and Guddeti [18] to construct a pairwise comparison matrix. In the pairwise comparison matrices of Hruska et al. [23] and Polat et al. [24], $L_{P} = L_{Q}$. In equation (1), the value assigned to $a_{ij}$ is infinity. Thus, in the method used by Chandavarkar
and Guddeti [18], the $a_{ij}$ value (infinity) is replaced by zero. This is one of the weaknesses of their method [18]. A comparison of the results obtained using their method [18] and those generated using the proposed method is presented in Tables 8 and 9. Based on these tables, it can be seen that the proposed method is better than that of Chandavarkar and Guddeti [18] because it always produces a consistent value. The proposed method is capable of giving a CI value close to zero and a CI value of zero if the matrix is perfectly consistent [25].

Table 7 – Summary of the results obtained using Li et al. [19] and those obtained using the proposed method

| Matrix data  | Size   | Consistency ratio (CR) | Original AHP | Li et al. [19] | Proposed method |
|--------------|--------|------------------------|--------------|----------------|-----------------|
| Hruska et al. [23] | 10 x 10 | 0.1845 (inconsistent) | 0.4056 (inconsistent) | 0.022 (consistent) |
| Polat [24]    | 11 x 11 | 0.0088 (consistent)   | 0.3622 (inconsistent) | 0.012 (consistent) |

Table 8 – Summary of the results obtained using the method Chandavarkar and Guddeti [18] and those obtained using the proposed method for example 1

| n/n | [23] | Chandavarkar and Guddeti method [18] | Proposed method |
|-----|------|-------------------------------------|-----------------|
| Criteria | Weight | Weight | Contribution level (1-9) | Weight |
| $C_1$ | 0.291 | 0.309 | 9 | 0.181 |
| $C_2$ | 0.229 | 0.223 | 8 | 0.161 |
| $C_3$ | 0.114 | 0.158 | 7 | 0.141 |
| $C_4$ | 0.114 | 0.158 | 7 | 0.141 |
| $C_5$ | 0.036 | 0.023 | 3 | 0.060 |
| $C_6$ | 0.037 | 0.023 | 3 | 0.060 |
| $C_7$ | 0.036 | 0.023 | 3 | 0.060 |
| $C_8$ | 0.068 | 0.034 | 5 | 0.100 |
| $C_9$ | 0.052 | 0.031 | 4 | 0.076 |
| $C_{10}$ | 0.023 | 0.018 | 1 | 0.020 |
| CR | 0.184 (inconsistent) | 0.066 (consistent) | 0.022 (consistent) |

Table 9 – Summary of the results obtained using the Chandavarkar and Guddeti method [18] and those of the proposed method for example 2

| [24] | Chandavarkar and Guddeti method [18] | Proposed method |
|-----|-------------------------------------|-----------------|
| Criteria | Weight | Weight | Contribution level (1-9) | Weight |
| $C_1$ | 0.165 | 0.382 | 9 | 0.181 |
| $C_2$ | 0.135 | 0.289 | 8 | 0.161 |
| $C_3$ | 0.111 | 0.151 | 7 | 0.141 |
| $C_4$ | 0.092 | 0.039 | 7 | 0.141 |
| $C_5$ | 0.080 | 0.039 | 3 | 0.060 |
| $C_6$ | 0.078 | 0.039 | 3 | 0.060 |
| $C_7$ | 0.052 | 0.007 | 3 | 0.060 |
| $C_8$ | 0.059 | 0.007 | 5 | 0.100 |
| $C_9$ | 0.076 | 0.005 | 4 | 0.076 |
| $C_{10}$ | 0.104 | 0.013 | 1 | 0.020 |
| $C_{11}$ | 0.048 | 0.028 | 1 | 0.020 |
| CR | 0.008 (consistent) | 0.299 (inconsistent) | 0.022 (consistent) |

Test of the effect of criteria weight on supplier selection using the proposed method.
We examined the effect of criteria weight on supplier selection using the proposed method as compared with that using the original AHP. The data used in the test are shown in Tables 10 and 11. These data are performance data from each supplier for each criterion. As shown in the tables, there are six suppliers (SC1, SC2, SC3, SC4, SC5, and SC6).
Table 10 – Supplier data for example 1

| Supplier | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 |
|----------|----|----|----|----|----|----|----|----|----|-----|
| SC1      | 8  | 5  | 3  | 1  | 8  | 7  | 8  | 3  | 5   | 3   |
| SC2      | 10 | 6  | 5  | 2  | 7  | 10 | 5  | 1  | 8   | 1   |
| SC3      | 10 | 6  | 3  | 3  | 5  | 8  | 6  | 4  | 5   | 5   |
| SC4      | 9  | 7  | 4  | 2  | 4  | 11 | 2  | 3  | 7   | 0   |
| SC5      | 12 | 8  | 4  | 2  | 6  | 9  | 4  | 0  | 8   | 2   |
| SC6      | 10 | 6  | 8  | 4  | 5  | 6  | 3  | 2  | 7   | 1   |

Table 11 – Supplier data for example 2

| Supplier | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 |
|----------|----|----|----|----|----|----|----|----|----|-----|-----|
| SC1      | 8  | 5  | 3  | 1  | 8  | 7  | 8  | 3  | 5   | 3   | 8   |
| SC2      | 10 | 6  | 5  | 2  | 7  | 10 | 5  | 1  | 8   | 1   | 6   |
| SC3      | 10 | 6  | 3  | 3  | 5  | 8  | 6  | 4  | 5   | 5   | 10  |
| SC4      | 9  | 7  | 4  | 2  | 4  | 11 | 2  | 3  | 7   | 0   | 4   |
| SC5      | 12 | 8  | 4  | 2  | 6  | 9  | 4  | 0  | 8   | 2   | 5   |
| SC5      | 10 | 6  | 8  | 4  | 5  | 6  | 3  | 2  | 7   | 1   | 9   |

Figure 6 is the result of the proposed method using supplier data in Table 10. Figures 7 is the result of the proposed method using supplier data in Table 11. The results of the sequence of suppliers are the same in Figure 6. Test supplier is SC 5, and the worst supplier is SC 1. It was inconsistent in the pairwise comparison matrices of Hruska et al. [23] but consistent when using the proposed method Thus, the results obtained by Hruska et al. [23] and those obtained using the method of Li et al. [19] are invalid, although they yield the same solution as that obtained using the proposed method.

Using the pairwise comparison matrix of by Polat [24] gives the solution shown in Figure 7. Figure 7 shows that the solution of the proposed method is the same as that generated using the original AHP. The results obtained using the method of Chandavarkar and Guddeti [18] are invalid, although the method yields the same solution as those generated using the proposed method. Proposed method produce the same solution as that
obtained using a consistent pairwise comparison matrix. An inconsistent matrix results in a
different supplier selection solution.

CONCLUSION

The solution obtained using the proposed method is better than that achieved using the
method of Li et al. [19] and that of Chandavarkar and Guddeti [18], as the proposed method
is capable of generating a valid solution, regardless of the number of criteria and without
having to revise the pairwise comparison matrix. The proposed method is also easier to use
because decision makers have only to assign a contribution level to each criterion rather
than drawing comparisons between criteria. Furthermore, the proposed method is simpler
than the original AHP, as it does not require a consistency test. In addition, using the
proposed method, the pairwise comparison matrix does not have to be complete.

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Republic of Indonesia.
Limitations of the study. The proposed method has not been tested using real data.

Conflict of interest. The authors declare that there are no conflicts of interest.

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**APPENDIX**

| Criteria C1 is compared with criteria C2 | Criteria C2 is compared with criteria C3 | Criteria C1 is compared with criteria C3 | Consistency ratio (CR) | Conclusion |
|----------------------------------------|----------------------------------------|----------------------------------------|-----------------------|------------|
| 1                                      | 2                                      | %                                     | 0.209                 | Inconsistent |
|                                        | 3                                      | %                                     | 0.356                 | Inconsistent |
|                                        | 4                                      | %                                     | 0.490                 | Inconsistent |
|                                        | 5                                      | %                                     | 0.613                 | Inconsistent |
|                                        | 6                                      | %                                     | 0.730                 | Inconsistent |
|                                        | 7                                      | %                                     | 0.843                 | Inconsistent |
|                                        | 8                                      | %                                     | 0.951                 | Inconsistent |
|                                        | 9                                      | %                                     | 1.057                 | Inconsistent |
|                                        | 1                                      | %                                     | 0.209                 | Inconsistent |
|                                        | 2                                      | %                                     | 0.481                 | Inconsistent |
|                                        | 3                                      | %                                     | 0.700                 | Inconsistent |
|                                        | 4                                      | %                                     | 0.890                 | Inconsistent |
|                                        | 5                                      | %                                     | 1.063                 | Inconsistent |
|                                        | 6                                      | %                                     | 1.224                 | Inconsistent |
|                                        | 7                                      | %                                     | 1.378                 | Inconsistent |
|                                        | 8                                      | %                                     | 1.526                 | Inconsistent |
|                                        | 9                                      | %                                     | 1.670                 | Inconsistent |
| 2                                      | 1                                      | %                                     | 0.356                 | Inconsistent |
|                                        | 2                                      | %                                     | 0.700                 | Inconsistent |
|                                        | 3                                      | %                                     | 0.967                 | Inconsistent |
|                                        | 4                                      | %                                     | 1.193                 | Inconsistent |
|                                        | 5                                      | %                                     | 1.397                 | Inconsistent |
|                                        | 6                                      | %                                     | 1.586                 | Inconsistent |
|                                        | 7                                      | %                                     | 1.764                 | Inconsistent |
|                                        | 8                                      | %                                     | 1.936                 | Inconsistent |
|                                        | 9                                      | %                                     | 2.103                 | Inconsistent |
| 3                                      | 1                                      | %                                     | 0.356                 | Inconsistent |
|                                        | 2                                      | %                                     | 0.700                 | Inconsistent |
|                                        | 3                                      | %                                     | 0.967                 | Inconsistent |
|                                        | 4                                      | %                                     | 1.193                 | Inconsistent |
|                                        | 5                                      | %                                     | 1.397                 | Inconsistent |
|                                        | 6                                      | %                                     | 1.586                 | Inconsistent |
|                                        | 7                                      | %                                     | 1.764                 | Inconsistent |
|                                        | 8                                      | %                                     | 1.936                 | Inconsistent |
|                                        | 9                                      | %                                     | 2.103                 | Inconsistent |
| 4                                      | 1                                      | %                                     | 0.356                 | Inconsistent |
|                                        | 2                                      | %                                     | 0.700                 | Inconsistent |
|                                        | 3                                      | %                                     | 0.967                 | Inconsistent |
|                                        | 4                                      | %                                     | 1.193                 | Inconsistent |
|                                        | 5                                      | %                                     | 1.397                 | Inconsistent |
|                                        | 6                                      | %                                     | 1.586                 | Inconsistent |
|                                        | 7                                      | %                                     | 1.764                 | Inconsistent |
|                                        | 8                                      | %                                     | 1.936                 | Inconsistent |
|                                        | 9                                      | %                                     | 2.103                 | Inconsistent |
|   |   |   |   |   |
|---|---|---|---|---|
| 5 | 1 | ½ | 0.608 | Inconsistent |
|   | 2 | ½ | 1.063 | Inconsistent |
|   | 3 | ½ | 1.400 | Inconsistent |
|   | 4 | ½ | 1.680 | Inconsistent |
|   | 5 | ½ | 1.926 | Inconsistent |
|   | 6 | ½ | 2.152 | Inconsistent |
|   | 7 | ½ | 2.364 | Inconsistent |
|   | 8 | ½ | 2.567 | Inconsistent |
|   | 9 | ½ | 2.762 | Inconsistent |
| 6 | 1 | ½ | 0.721 | Inconsistent |
|   | 2 | ½ | 1.224 | Inconsistent |
|   | 3 | ½ | 1.592 | Inconsistent |
|   | 4 | ½ | 1.883 | Inconsistent |
|   | 5 | ½ | 2.157 | Inconsistent |
|   | 6 | ½ | 2.397 | Inconsistent |
|   | 7 | ½ | 2.622 | Inconsistent |
|   | 8 | ½ | 2.836 | Inconsistent |
|   | 9 | ½ | 3.042 | Inconsistent |
| 7 | 1 | ½ | 0.829 | Inconsistent |
|   | 2 | ½ | 1.378 | Inconsistent |
|   | 3 | ½ | 1.774 | Inconsistent |
|   | 4 | ½ | 2.096 | Inconsistent |
|   | 5 | ½ | 2.375 | Inconsistent |
|   | 6 | ½ | 2.629 | Inconsistent |
|   | 7 | ½ | 2.865 | Inconsistent |
|   | 8 | ½ | 3.089 | Inconsistent |
|   | 9 | ½ | 3.304 | Inconsistent |
| 8 | 1 | ½ | 0.933 | Inconsistent |
|   | 2 | ½ | 1.526 | Inconsistent |
|   | 3 | ½ | 1.949 | Inconsistent |
|   | 4 | ½ | 2.291 | Inconsistent |
|   | 5 | ½ | 2.585 | Inconsistent |
|   | 6 | ½ | 2.851 | Inconsistent |
|   | 7 | ½ | 3.097 | Inconsistent |
|   | 8 | ½ | 3.330 | Inconsistent |
|   | 9 | ½ | 3.553 | Inconsistent |
| 9 | 1 | ½ | 1.033 | Inconsistent |
|   | 2 | ½ | 1.670 | Inconsistent |
|   | 3 | ½ | 2.120 | Inconsistent |
|   | 4 | ½ | 2.480 | Inconsistent |
|   | 5 | ½ | 2.789 | Inconsistent |
|   | 6 | ½ | 3.066 | Inconsistent |
|   | 7 | ½ | 3.322 | Inconsistent |
|   | 8 | ½ | 3.563 | Inconsistent |
|   | 9 | ½ | 3.793 | Inconsistent |
| 1 | 1 | 1/3 | 0.131 | Inconsistent |
|   | 2 | 1/3 | 0.356 | Inconsistent |
|   | 3 | 1/3 | 0.546 | Inconsistent |
|   | 4 | 1/3 | 0.714 | Inconsistent |
|   | 5 | 1/3 | 0.869 | Inconsistent |
|   | 6 | 1/3 | 1.014 | Inconsistent |
|   | 7 | 1/3 | 1.152 | Inconsistent |
|   | 8 | 1/3 | 1.286 | Inconsistent |
|   | 9 | 1/3 | 1.417 | Inconsistent |
| 2 | 1 | 1/3 | 0.356 | Inconsistent |
|   | 2 | 1/3 | 0.700 | Inconsistent |
|   | 3 | 1/3 | 0.967 | Inconsistent |
|   | 4 | 1/3 | 1.195 | Inconsistent |
|   | 5 | 1/3 | 1.400 | Inconsistent |
|   | 6 | 1/3 | 1.592 | Inconsistent |
|   | 7 | 1/3 | 1.774 | Inconsistent |
|   | 8 | 1/3 | 1.949 | Inconsistent |
|   | 9 | 1/3 | 2.120 | Inconsistent |
| 3 | 1 | 1/3 | 0.546 | Inconsistent |
|   | 2 | 1/3 | 0.967 | Inconsistent |
|   | 3 | 1/3 | 1.286 | Inconsistent |
|   | 4 | 1/3 | 1.547 | Inconsistent |
|   | 5 | 1/3 | 1.784 | Inconsistent |
|   | 6 | 1/3 | 2.004 | Inconsistent |
|   | 7 | 1/3 | 2.212 | Inconsistent |
|   | 8 | 1/3 | 2.412 | Inconsistent |
|   | 9 | 1/3 | 2.606 | Inconsistent |
|   |   |   |   |
|---|---|---|---|
| 4 | 1 | 1/3 | 0.711 Inconsistent |
| 4 | 2 | 1/3 | 1.193 Inconsistent |
| 4 | 3 | 1/3 | 1.547 Inconsistent |
| 4 | 4 | 1/3 | 1.841 Inconsistent |
| 4 | 5 | 1/3 | 2.102 Inconsistent |
| 4 | 6 | 1/3 | 2.342 Inconstant |
| 4 | 7 | 1/3 | 2.668 Inconstant |
| 4 | 8 | 1/3 | 2.786 Inconstant |
| 4 | 9 | 1/3 | 2.996 Inconstant |

| 5 | 1 | 1/3 | 0.861 Inconsistent |
| 5 | 2 | 1/3 | 1.397 Inconsistent |
| 5 | 3 | 1/3 | 1.784 Inconsistent |
| 5 | 4 | 1/3 | 2.102 Inconstant |
| 5 | 5 | 1/3 | 2.383 Inconstant |
| 5 | 6 | 1/3 | 2.640 Inconstant |
| 5 | 7 | 1/3 | 2.881 Inconstant |
| 5 | 8 | 1/3 | 3.112 Inconstant |
| 5 | 9 | 1/3 | 3.335 Inconstant |

| 6 | 1 | 1/3 | 0.999 Inconstant |
| 6 | 2 | 1/3 | 1.586 Inconstant |
| 6 | 3 | 1/3 | 2.004 Inconstant |
| 6 | 4 | 1/3 | 2.344 Inconstant |
| 6 | 5 | 1/3 | 2.642 Inconstant |
| 6 | 6 | 1/3 | 2.913 Inconstant |
| 6 | 7 | 1/3 | 3.167 Inconstant |
| 6 | 8 | 1/3 | 3.409 Inconstant |
| 6 | 9 | 1/3 | 3.643 Inconstant |

| 7 | 1 | 1/3 | 1.130 Inconstant |
| 7 | 2 | 1/3 | 1.764 Inconstant |
| 7 | 3 | 1/3 | 2.212 Inconstant |
| 7 | 4 | 1/3 | 2.573 Inconstant |
| 7 | 5 | 1/3 | 2.886 Inconstant |
| 7 | 6 | 1/3 | 3.170 Inconstant |
| 7 | 7 | 1/3 | 3.436 Inconstant |
| 7 | 8 | 1/3 | 3.688 Inconstant |
| 7 | 9 | 1/3 | 3.930 Inconstant |

| 8 | 1 | 1/3 | 1.254 Inconstant |
| 8 | 2 | 1/3 | 1.936 Inconstant |
| 8 | 3 | 1/3 | 2.412 Inconstant |
| 8 | 4 | 1/3 | 2.792 Inconstant |
| 8 | 5 | 1/3 | 3.120 Inconstant |
| 8 | 6 | 1/3 | 3.417 Inconstant |
| 8 | 7 | 1/3 | 3.692 Inconstant |
| 8 | 8 | 1/3 | 3.953 Inconstant |
| 8 | 9 | 1/3 | 4.203 Inconstant |

| 9 | 1 | 1/3 | 1.375 Inconstant |
| 9 | 2 | 1/3 | 2.103 Inconstant |
| 9 | 3 | 1/3 | 2.606 Inconstant |
| 9 | 4 | 1/3 | 3.005 Inconstant |
| 9 | 5 | 1/3 | 3.347 Inconstant |
| 9 | 6 | 1/3 | 3.655 Inconstant |
| 9 | 7 | 1/3 | 3.940 Inconstant |
| 9 | 8 | 1/3 | 4.209 Inconstant |
| 9 | 9 | 1/3 | 4.466 Inconstant |

| 1 | 1/4 | 0.211 Inconstant |
| 1 | 2/4 | 0.487 Inconstant |
| 1 | 3/4 | 0.711 Inconstant |
| 1 | 4/4 | 0.906 Inconstant |
| 2 | 1/4 | 0.490 Inconstant |
| 2 | 2/4 | 0.890 Inconstant |
| 2 | 3/4 | 1.193 Inconstant |
| 2 | 4/4 | 1.450 Inconstant |
| 2 | 5/4 | 1.680 Inconstant |
| 2 | 6/4 | 1.893 Inconstant |
| 2 | 7/4 | 2.096 Inconstant |
| 2 | 8/4 | 2.291 Inconstant |
| 2 | 9/4 | 2.480 Inconstant |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   |   |   |   |   |
| 3 | 1 | ¼ | 0.714 | Inconsistent |
| 2 | ¼ | 1.195 | Inconsistent |
| 3 | ¼ | 1.547 | Inconsistent |
| 4 | ¼ | 1.841 | Inconsistent |
| 5 | ¼ | 2.102 | Inconsistent |
| 6 | ¼ | 2.344 | Inconsistent |
| 7 | ¼ | 2.573 | Inconsistent |
| 8 | ¼ | 2.792 | Inconsistent |
| 9 | ¼ | 3.005 | Inconsistent |
|   |   |   |   |   |   |
| 4 | 1 | ¼ | 0.906 | Inconsistent |
| 2 | ¼ | 1.450 | Inconsistent |
| 3 | ¼ | 1.841 | Inconsistent |
| 4 | ¼ | 2.163 | Inconsistent |
| 5 | ¼ | 2.448 | Inconsistent |
| 6 | ¼ | 2.711 | Inconsistent |
| 7 | ¼ | 2.958 | Inconsistent |
| 8 | ¼ | 3.194 | Inconsistent |
| 9 | ¼ | 3.424 | Inconsistent |
|   |   |   |   |   |   |
| 5 | 1 | ¼ | 1.078 | Inconsistent |
| 2 | ¼ | 1.677 | Inconsistent |
| 3 | ¼ | 2.102 | Inconsistent |
| 4 | ¼ | 2.448 | Inconsistent |
| 5 | ¼ | 2.753 | Inconsistent |
| 6 | ¼ | 3.032 | Inconsistent |
| 7 | ¼ | 3.294 | Inconsistent |
| 8 | ¼ | 3.544 | Inconsistent |
| 9 | ¼ | 3.786 | Inconsistent |
|   |   |   |   |   |   |
| 6 | 1 | ¼ | 1.235 | Inconsistent |
| 2 | ¼ | 1.886 | Inconsistent |
| 3 | ¼ | 2.342 | Inconsistent |
| 4 | ¼ | 2.711 | Inconsistent |
| 5 | ¼ | 3.032 | Inconsistent |
| 6 | ¼ | 3.325 | Inconsistent |
| 7 | ¼ | 3.600 | Inconsistent |
| 8 | ¼ | 3.861 | Inconsistent |
| 9 | ¼ | 4.113 | Inconsistent |
|   |   |   |   |   |   |
| 7 | 1 | ¼ | 1.383 | Inconsistent |
| 2 | ¼ | 2.083 | Inconsistent |
| 3 | ¼ | 2.568 | Inconsistent |
| 4 | ¼ | 2.958 | Inconsistent |
| 5 | ¼ | 3.295 | Inconsistent |
| 6 | ¼ | 3.601 | Inconsistent |
| 7 | ¼ | 3.886 | Inconsistent |
| 8 | ¼ | 4.158 | Inconsistent |
| 9 | ¼ | 4.418 | Inconsistent |
|   |   |   |   |   |   |
| 8 | 1 | ¼ | 1.524 | Inconsistent |
| 2 | ¼ | 2.272 | Inconsistent |
| 3 | ¼ | 2.786 | Inconsistent |
| 4 | ¼ | 3.194 | Inconsistent |
| 5 | ¼ | 3.547 | Inconsistent |
| 6 | ¼ | 3.864 | Inconsistent |
| 7 | ¼ | 4.160 | Inconsistent |
| 8 | ¼ | 4.439 | Inconsistent |
| 9 | ¼ | 4.708 | Inconsistent |
|   |   |   |   |   |   |
| 9 | 1 | ¼ | 1.659 | Inconsistent |
| 2 | ¼ | 2.455 | Inconsistent |
| 3 | ¼ | 2.996 | Inconsistent |
| 4 | ¼ | 3.424 | Inconsistent |
| 5 | ¼ | 3.790 | Inconsistent |
| 6 | ¼ | 4.119 | Inconsistent |
| 7 | ¼ | 4.423 | Inconsistent |
| 8 | ¼ | 4.711 | Inconsistent |
| 9 | ¼ | 4.987 | Inconsistent |
|   |   |   |   |   |   |
| 1 | 1 | 1/5 | 0.289 | Inconsistent |
| 2 | 1/5 | 0.608 | Inconsistent |
| 3 | 1/5 | 0.861 | Inconsistent |
| 4 | 1/5 | 1.078 | Inconsistent |
| 5 | 1/5 | 1.274 | Inconsistent |
| 6 | 1/5 | 1.457 | Inconsistent |
| 7 | 1/5 | 1.631 | Inconsistent |
| 8 | 1/5 | 1.798 | Inconsistent |
| 9 | 1/5 | 1.960 | Inconsistent |
|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 1/5 | 0.613 | Inconsistent |
| 2 | 1/5 | 1.063 | Inconsistent |
| 3 | 1/5 | 1.397 | Inconsistent |
| 4 | 1/5 | 1.677 | Inconsistent |
| 5 | 1/5 | 1.926 | Inconsistent |
| 6 | 1/5 | 2.157 | Inconsistent |
| 7 | 1/5 | 2.375 | Inconsistent |
| 8 | 1/5 | 2.585 | Inconsistent |
| 9 | 1/5 | 2.789 | Inconsistent |
| 1 | 1/5 | 0.869 | Inconsistent |
| 2 | 1/5 | 1.400 | Inconsistent |
| 3 | 1/5 | 1.784 | Inconsistent |
| 4 | 1/5 | 2.102 | Inconsistent |
| 5 | 1/5 | 2.383 | Inconsistent |
| 6 | 1/5 | 2.642 | Inconsistent |
| 7 | 1/5 | 2.866 | Inconsistent |
| 8 | 1/5 | 3.120 | Inconsistent |
| 9 | 1/5 | 3.347 | Inconsistent |
| 1 | 1/5 | 1.084 | Inconsistent |
| 2 | 1/5 | 1.680 | Inconsistent |
| 3 | 1/5 | 2.102 | Inconsistent |
| 4 | 1/5 | 2.448 | Inconsistent |
| 5 | 1/5 | 2.753 | Inconsistent |
| 6 | 1/5 | 3.032 | Inconsistent |
| 7 | 1/5 | 3.295 | Inconsistent |
| 8 | 1/5 | 3.547 | Inconsistent |
| 9 | 1/5 | 3.790 | Inconsistent |
| 1 | 1/5 | 1.274 | Inconsistent |
| 2 | 1/5 | 1.926 | Inconsistent |
| 3 | 1/5 | 2.383 | Inconsistent |
| 4 | 1/5 | 2.753 | Inconsistent |
| 5 | 1/5 | 3.077 | Inconsistent |
| 6 | 1/5 | 3.373 | Inconsistent |
| 7 | 1/5 | 3.650 | Inconsistent |
| 8 | 1/5 | 3.915 | Inconsistent |
| 9 | 1/5 | 4.170 | Inconsistent |
| 1 | 1/5 | 1.448 | Inconsistent |
| 2 | 1/5 | 2.152 | Inconsistent |
| 3 | 1/5 | 2.640 | Inconsistent |
| 4 | 1/5 | 3.032 | Inconsistent |
| 5 | 1/5 | 3.373 | Inconsistent |
| 6 | 1/5 | 3.683 | Inconsistent |
| 7 | 1/5 | 3.972 | Inconsistent |
| 8 | 1/5 | 4.248 | Inconsistent |
| 9 | 1/5 | 4.514 | Inconsistent |
| 1 | 1/5 | 1.610 | Inconsistent |
| 2 | 1/5 | 2.364 | Inconsistent |
| 3 | 1/5 | 2.881 | Inconsistent |
| 4 | 1/5 | 3.294 | Inconsistent |
| 5 | 1/5 | 3.650 | Inconsistent |
| 6 | 1/5 | 3.973 | Inconsistent |
| 7 | 1/5 | 4.273 | Inconsistent |
| 8 | 1/5 | 4.559 | Inconsistent |
| 9 | 1/5 | 4.833 | Inconsistent |
| 1 | 1/5 | 1.763 | Inconsistent |
| 2 | 1/5 | 2.567 | Inconsistent |
| 3 | 1/5 | 3.112 | Inconsistent |
| 4 | 1/5 | 3.544 | Inconsistent |
| 5 | 1/5 | 3.915 | Inconsistent |
| 6 | 1/5 | 4.249 | Inconsistent |
| 7 | 1/5 | 4.559 | Inconsistent |
| 8 | 1/5 | 4.853 | Inconsistent |
| 9 | 1/5 | 5.136 | Inconsistent |
| 1 | 1/5 | 1.910 | Inconsistent |
| 2 | 1/5 | 2.762 | Inconsistent |
| 3 | 1/5 | 3.335 | Inconsistent |
| 4 | 1/5 | 3.786 | Inconsistent |
| 5 | 1/5 | 4.170 | Inconsistent |
| 6 | 1/5 | 4.516 | Inconsistent |
| 7 | 1/5 | 4.835 | Inconsistent |
| 8 | 1/5 | 5.137 | Inconsistent |
| 9 | 1/5 | 5.426 | Inconsistent |
|   |   |   |   |
|---|---|---|---|
| 1 | 1/6 | 0.364 | Inconsistent |
| 2 | 1/6 | 0.721 | Inconsistent |
| 3 | 1/6 | 0.999 | Inconsistent |
| 4 | 1/6 | 1.235 | Inconsistent |
| 5 | 1/6 | 1.448 | Inconsistent |
| 6 | 1/6 | 1.645 | Inconsistent |
| 7 | 1/6 | 1.831 | Inconsistent |
| 8 | 1/6 | 2.010 | Inconsistent |
| 9 | 1/6 | 2.184 | Inconsistent |

| 2 | 1/6 | 0.730 | Inconsistent |
| 3 | 1/6 | 1.224 | Inconsistent |
| 4 | 1/6 | 1.586 | Inconsistent |
| 5 | 1/6 | 1.886 | Inconsistent |
| 6 | 1/6 | 2.152 | Inconsistent |
| 7 | 1/6 | 2.629 | Inconsistent |
| 8 | 1/6 | 2.851 | Inconsistent |
| 9 | 1/6 | 3.066 | Inconsistent |

| 3 | 1/6 | 1.014 | Inconsistent |
| 2 | 1/6 | 1.592 | Inconsistent |
| 3 | 1/6 | 2.004 | Inconsistent |
| 4 | 1/6 | 2.342 | Inconsistent |
| 5 | 1/6 | 2.640 | Inconsistent |
| 6 | 1/6 | 2.913 | Inconsistent |
| 7 | 1/6 | 3.170 | Inconsistent |
| 8 | 1/6 | 3.417 | Inconsistent |
| 9 | 1/6 | 3.655 | Inconsistent |

| 4 | 1/6 | 1.250 | Inconsistent |
| 2 | 1/6 | 1.893 | Inconsistent |
| 3 | 1/6 | 2.344 | Inconsistent |
| 4 | 1/6 | 2.711 | Inconsistent |
| 5 | 1/6 | 3.032 | Inconsistent |
| 6 | 1/6 | 3.325 | Inconsistent |
| 7 | 1/6 | 3.601 | Inconsistent |
| 8 | 1/6 | 3.864 | Inconsistent |
| 9 | 1/6 | 4.119 | Inconsistent |

| 5 | 1/6 | 1.457 | Inconsistent |
| 2 | 1/6 | 2.157 | Inconsistent |
| 3 | 1/6 | 2.642 | Inconsistent |
| 4 | 1/6 | 3.032 | Inconsistent |
| 5 | 1/6 | 3.373 | Inconsistent |
| 6 | 1/6 | 3.683 | Inconsistent |
| 7 | 1/6 | 3.973 | Inconsistent |
| 8 | 1/6 | 4.249 | Inconsistent |
| 9 | 1/6 | 4.516 | Inconsistent |

| 6 | 1/6 | 1.645 | Inconsistent |
| 2 | 1/6 | 2.397 | Inconsistent |
| 3 | 1/6 | 2.913 | Inconsistent |
| 4 | 1/6 | 3.325 | Inconsistent |
| 5 | 1/6 | 3.683 | Inconsistent |
| 6 | 1/6 | 4.006 | Inconsistent |
| 7 | 1/6 | 4.309 | Inconsistent |
| 8 | 1/6 | 4.596 | Inconsistent |
| 9 | 1/6 | 4.873 | Inconsistent |

| 7 | 1/6 | 1.810 | Inconsistent |
| 2 | 1/6 | 2.364 | Inconsistent |
| 3 | 1/6 | 2.881 | Inconsistent |
| 4 | 1/6 | 3.294 | Inconsistent |
| 5 | 1/6 | 3.650 | Inconsistent |
| 6 | 1/6 | 3.973 | Inconsistent |
| 7 | 1/6 | 4.273 | Inconsistent |
| 8 | 1/6 | 4.559 | Inconsistent |
| 9 | 1/6 | 4.833 | Inconsistent |

| 8 | 1/6 | 1.983 | Inconsistent |
| 2 | 1/6 | 2.836 | Inconsistent |
| 3 | 1/6 | 3.409 | Inconsistent |
| 4 | 1/6 | 3.861 | Inconsistent |
| 5 | 1/6 | 4.248 | Inconsistent |
| 6 | 1/6 | 4.596 | Inconsistent |
| 7 | 1/6 | 4.919 | Inconsistent |
| 8 | 1/6 | 5.224 | Inconsistent |
| 9 | 1/6 | 5.517 | Inconsistent |
|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1/6 | 2.141 | Inconsistent |
| 2 | 1/6 | 3.042 | Inconsistent |
| 3 | 1/6 | 3.643 | Inconsistent |
| 4 | 1/6 | 4.113 | Inconsistent |
| 5 | 1/6 | 4.514 | Inconsistent |
| 6 | 1/6 | 4.873 | Inconsistent |
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| 8 | 1/6 | 5.517 | Inconsistent |
| 9 | 1/6 | 5.817 | Inconsistent |
| 1 | 1/7 | 0.436 | Inconsistent |
| 2 | 1/7 | 0.829 | Inconsistent |
| 3 | 1/7 | 1.130 | Inconsistent |
| 4 | 1/7 | 1.383 | Inconsistent |
| 5 | 1/7 | 1.610 | Inconsistent |
| 6 | 1/7 | 1.819 | Inconsistent |
| 7 | 1/7 | 2.017 | Inconsistent |
| 8 | 1/7 | 2.206 | Inconsistent |
| 9 | 1/7 | 2.389 | Inconsistent |
| 1 | 1/7 | 0.843 | Inconsistent |
| 2 | 1/7 | 1.378 | Inconsistent |
| 3 | 1/7 | 1.764 | Inconsistent |
| 4 | 1/7 | 2.083 | Inconsistent |
| 5 | 1/7 | 2.364 | Inconsistent |
| 6 | 1/7 | 2.622 | Inconsistent |
| 7 | 1/7 | 2.865 | Inconsistent |
| 8 | 1/7 | 3.097 | Inconsistent |
| 9 | 1/7 | 3.322 | Inconsistent |
| 1 | 1/7 | 1.152 | Inconsistent |
| 2 | 1/7 | 1.774 | Inconsistent |
| 3 | 1/7 | 2.212 | Inconsistent |
| 4 | 1/7 | 2.568 | Inconsistent |
| 5 | 1/7 | 2.881 | Inconsistent |
| 6 | 1/7 | 3.167 | Inconsistent |
| 7 | 1/7 | 3.436 | Inconsistent |
| 8 | 1/7 | 3.692 | Inconsistent |
| 9 | 1/7 | 3.940 | Inconsistent |
| 1 | 1/7 | 1.408 | Inconsistent |
| 2 | 1/7 | 2.096 | Inconsistent |
| 3 | 1/7 | 2.573 | Inconsistent |
| 4 | 1/7 | 2.958 | Inconsistent |
| 5 | 1/7 | 3.294 | Inconsistent |
| 6 | 1/7 | 3.600 | Inconsistent |
| 7 | 1/7 | 3.886 | Inconsistent |
| 8 | 1/7 | 4.160 | Inconsistent |
| 9 | 1/7 | 4.423 | Inconsistent |
| 1 | 1/7 | 1.631 | Inconsistent |
| 2 | 1/7 | 2.375 | Inconsistent |
| 3 | 1/7 | 2.886 | Inconsistent |
| 4 | 1/7 | 3.295 | Inconsistent |
| 5 | 1/7 | 3.650 | Inconsistent |
| 6 | 1/7 | 3.972 | Inconsistent |
| 7 | 1/7 | 4.273 | Inconsistent |
| 8 | 1/7 | 4.569 | Inconsistent |
| 9 | 1/7 | 4.835 | Inconsistent |
| 1 | 1/7 | 1.831 | Inconsistent |
| 2 | 1/7 | 2.629 | Inconsistent |
| 3 | 1/7 | 3.170 | Inconsistent |
| 4 | 1/7 | 3.801 | Inconsistent |
| 5 | 1/7 | 3.973 | Inconsistent |
| 6 | 1/7 | 4.309 | Inconsistent |
| 7 | 1/7 | 4.622 | Inconsistent |
| 8 | 1/7 | 4.919 | Inconsistent |
| 9 | 1/7 | 5.204 | Inconsistent |
| 8 | 1/7 | 2.191 | Inconsistent |
|---|-----|-------|--------------|
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| 3 | 1/7 | 3.688 | Inconsistent |
| 4 | 1/7 | 4.158 | Inconsistent |
| 5 | 1/7 | 4.559 | Inconsistent |
| 6 | 1/7 | 4.918 | Inconsistent |
| 7 | 1/7 | 5.251 | Inconsistent |
| 8 | 1/7 | 5.566 | Inconsistent |
| 9 | 1/7 | 5.868 | Inconsistent |
| 9 | 1/8 | 0.951 | Inconsistent |
| 2 | 1/8 | 0.507 | Inconsistent |
| 3 | 1/8 | 1.254 | Inconsistent |
| 4 | 1/8 | 1.524 | Inconsistent |
| 5 | 1/8 | 1.763 | Inconsistent |
| 6 | 1/8 | 1.983 | Inconsistent |
| 7 | 1/8 | 2.191 | Inconsistent |
| 8 | 1/8 | 2.389 | Inconsistent |
| 9 | 1/8 | 2.581 | Inconsistent |
| 3 | 1/8 | 2.792 | Inconsistent |
| 4 | 1/8 | 3.122 | Inconsistent |
| 5 | 1/8 | 3.409 | Inconsistent |
| 6 | 1/8 | 3.688 | Inconsistent |
| 7 | 1/8 | 3.951 | Inconsistent |
| 8 | 1/8 | 4.209 | Inconsistent |
| 9 | 1/8 | 4.563 | Inconsistent |
| 4 | 1/8 | 1.798 | Inconsistent |
| 5 | 1/8 | 2.191 | Inconsistent |
| 6 | 1/8 | 2.585 | Inconsistent |
| 7 | 1/8 | 3.120 | Inconsistent |
| 8 | 1/8 | 3.544 | Inconsistent |
| 9 | 1/8 | 3.930 | Inconsistent |
| 6 | 1/8 | 2.792 | Inconsistent |
| 7 | 1/8 | 4.158 | Inconsistent |
| 8 | 1/8 | 4.559 | Inconsistent |
| 9 | 1/8 | 4.918 | Inconsistent |
| 7 | 1/8 | 5.224 | Inconsistent |
| 8 | 1/8 | 5.517 | Inconsistent |

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|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 1/8 | 2.206 | Inconsistent |
| 2 | 1/8 | 3.097 | Inconsistent |
| 3 | 1/8 | 3.692 | Inconsistent |
| 4 | 1/8 | 4.160 | Inconsistent |
| 5 | 1/8 | 4.599 | Inconsistent |
| 6 | 1/8 | 4.919 | Inconsistent |
| 7 | 1/8 | 5.251 | Inconsistent |
| 8 | 1/8 | 5.566 | Inconsistent |
| 9 | 1/8 | 5.868 | Inconsistent |
| 10 | 1/8 | 2.389 | Inconsistent |
| 11 | 1/8 | 3.330 | Inconsistent |
| 12 | 1/8 | 3.953 | Inconsistent |
| 13 | 1/8 | 4.439 | Inconsistent |
| 14 | 1/8 | 4.853 | Inconsistent |
| 15 | 1/8 | 5.224 | Inconsistent |
| 16 | 1/8 | 5.566 | Inconsistent |
| 17 | 1/8 | 5.889 | Inconsistent |
| 18 | 1/8 | 6.199 | Inconsistent |
| 19 | 1/9 | 0.576 | Inconsistent |
| 20 | 1/9 | 1.033 | Inconsistent |
| 21 | 1/9 | 1.375 | Inconsistent |
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| 24 | 1/9 | 2.141 | Inconsistent |
| 25 | 1/9 | 2.357 | Inconsistent |
| 26 | 1/9 | 2.563 | Inconsistent |
| 27 | 1/9 | 2.762 | Inconsistent |
| 28 | 1/9 | 1.057 | Inconsistent |
| 29 | 1/9 | 1.670 | Inconsistent |
| 30 | 1/9 | 2.103 | Inconsistent |
| 31 | 1/9 | 2.455 | Inconsistent |
| 32 | 1/9 | 2.762 | Inconsistent |
| 33 | 1/9 | 3.042 | Inconsistent |
| 34 | 1/9 | 3.042 | Inconsistent |
| 35 | 1/9 | 3.553 | Inconsistent |
| 36 | 1/9 | 3.793 | Inconsistent |
| 37 | 1/9 | 1.417 | Inconsistent |
| 38 | 1/9 | 2.120 | Inconsistent |
| 39 | 1/9 | 2.606 | Inconsistent |
| 40 | 1/9 | 2.996 | Inconsistent |
| 41 | 1/9 | 3.335 | Inconsistent |
| 42 | 1/9 | 3.643 | Inconsistent |
| 43 | 1/9 | 3.930 | Inconsistent |
| 44 | 1/9 | 4.203 | Inconsistent |
| 45 | 1/9 | 4.466 | Inconsistent |
| 46 | 1/9 | 1.709 | Inconsistent |
| 47 | 1/9 | 2.480 | Inconsistent |
| 48 | 1/9 | 3.005 | Inconsistent |
| 49 | 1/9 | 3.424 | Inconsistent |
| 50 | 1/9 | 3.786 | Inconsistent |
| 51 | 1/9 | 4.113 | Inconsistent |
| 52 | 1/9 | 4.418 | Inconsistent |
| 53 | 1/9 | 4.708 | Inconsistent |
| 54 | 1/9 | 4.987 | Inconsistent |
| 55 | 1/9 | 1.960 | Inconsistent |
| 56 | 1/9 | 2.789 | Inconsistent |
| 57 | 1/9 | 3.347 | Inconsistent |
| 58 | 1/9 | 3.790 | Inconsistent |
| 59 | 1/9 | 4.170 | Inconsistent |
| 60 | 1/9 | 4.514 | Inconsistent |
| 61 | 1/9 | 4.833 | Inconsistent |
| 62 | 1/9 | 5.136 | Inconsistent |
| 63 | 1/9 | 5.426 | Inconsistent |
|   |   |   |
|---|---|---|
| 1 | 1/9 | 2.184 | Inconsistent |
| 2 | 1/9 | 3.066 | Inconsistent |
| 3 | 1/9 | 3.655 | Inconsistent |
| 4 | 1/9 | 4.119 | Inconsistent |
| 5 | 1/9 | 4.516 | Inconsistent |
| 6 | 1/9 | 4.873 | Inconsistent |
| 7 | 1/9 | 5.204 | Inconsistent |
| 8 | 1/9 | 5.517 | Inconsistent |
| 9 | 1/9 | 5.817 | Inconsistent |

| 7 |   |   |
|---|---|---|
| 1 | 1/9 | 2.389 | Inconsistent |
| 2 | 1/9 | 3.322 | Inconsistent |
| 3 | 1/9 | 3.940 | Inconsistent |
| 4 | 1/9 | 4.423 | Inconsistent |
| 5 | 1/9 | 4.835 | Inconsistent |
| 6 | 1/9 | 5.204 | Inconsistent |
| 7 | 1/9 | 5.546 | Inconsistent |
| 8 | 1/9 | 5.868 | Inconsistent |
| 9 | 1/9 | 6.177 | Inconsistent |

| 8 |   |   |
|---|---|---|
| 1 | 1/9 | 2.581 | Inconsistent |
| 2 | 1/9 | 3.563 | Inconsistent |
| 3 | 1/9 | 4.209 | Inconsistent |
| 4 | 1/9 | 4.711 | Inconsistent |
| 5 | 1/9 | 5.137 | Inconsistent |
| 6 | 1/9 | 5.517 | Inconsistent |
| 7 | 1/9 | 5.868 | Inconsistent |
| 8 | 1/9 | 6.199 | Inconsistent |
| 9 | 1/9 | 6.515 | Inconsistent |

| 9 |   |   |
|---|---|---|
| 1 | 1/9 | 2.762 | Inconsistent |
| 2 | 1/9 | 3.793 | Inconsistent |
| 3 | 1/9 | 4.466 | Inconsistent |
| 4 | 1/9 | 4.987 | Inconsistent |
| 5 | 1/9 | 5.426 | Inconsistent |
| 6 | 1/9 | 5.817 | Inconsistent |
| 7 | 1/9 | 6.177 | Inconsistent |
| 8 | 1/9 | 6.515 | Inconsistent |
| 9 | 1/9 | 6.838 | Inconsistent |
ABSTRACT
Fish meatballs are processed fishery products that use grind fish meat or surimi of minimum 40% mixed with flour, and other required ingredients to go through kneading and cooking. Fish meatballs are one of the selected products with high demand in the market. The household business scale is vulnerable to competition, it needs a strategy in managing the marketing of this processed product. The method used to achieve the goal is by identifying and grouping the problems into the aspect of management, production, and marketing of fish meatballs business from UKM NM Food it is then selected based on the priority of the problems as well as the science and technology to be applied to solve the prioritized problems.

KEY WORDS
Marketing, management, fish meatballs, food.

Competition in the business field is not getting tighter that it required a management to answer this challenge. Management is a series of process to achieve organizational goals by working together through the optimization of resources owned by the organization. In general, the management function is divided into four matters among others planning function, organizing function, directing function, and controlling function. Good management should be able to motivate all of the related things and to regulate the process in order to be effective and efficient in terms of natural resources as well as human resources.

Fish meatballs are processed fishery products that use grind fish meat or surimi of minimum 40% mixed with flour, and other required ingredients to go through kneading and cooking processes. One of favorable fish processed products is fish meatballs. Fish meatballs are mostly used in various kinds of processed foods such as a complementary ingredient in vegetable stir-fry dishes, tofu meatballs, meatball noodles, grilled meatballs. Thus, the demand for this product at NM Food is high averaging 30 kg per week.

The raw material for fish meatballs is obtained by washing fish meat and adding cryoprotectant known as surimi (Purwandari et al 2014). The processing of fish meatballs is started by mixing surimi and salt to make sticky pasta and then other ingredients are also added to enrich the flavor and then the dough is formed and cooked to be packed.

LITERATURE REVIEW

Organizing is the division of work that has been planned to be completed by the members of a workgroup, the definition of work relationships between them and the provision of the appropriate working environment.
Organizing is one of the management functions that should get more attention from the leader. The drive is a tight relationship between individual aspects occurring from the arrangement of the subordinate to understand and the division of effective and efficient work to achieve the real goal of the company. On the above understanding, there is an emphasis on the obligation of the appropriate way to be used as drive, which is by motivating or giving work motives to the subordinates so that they are happily willing to do all of the activities in order to achieve the goal effectively and efficiently.

Supervision is an attempt to examine the activities that have been carried out. Supervision is oriented to the object in question and is a tool to get people to work towards the desired goal. The description illustrates that supervision can be formulated as a process of determining what will be achieved, namely what standards are being carried out, assessing implementation, and when necessary to make improvements. Hence, the implementation is in accordance with the specified plan.

Planning is mature and smart determination about what will be done in the future in order to achieve the goal. This definition implies that decision making is part of planning, but the planning process can also occur after determining the goal and decision.

The industry is an economic activity that processes raw materials, basic commodities, intermediate goods and/or finished goods into goods with a higher value of use, including industrial design activities and industrial engineering (Kartasapoetra, 2000). In Indonesia, the industry can be classified into several types of groups. Industry based on the amount of workforce is distinguished into 4 groups, namely:

- A large industry that has a workforce of 100 people or more;
- A medium industry that has a workforce of 20–99 people;
- A small industry that has a workforce between 5–19 people;
- The home industry has a workforce between 1–4 people (BPS, 2002).

According to Law of Republic of Indonesia No.13 of 2003 concerning manpower, the workforce is every individual who is able to do work to produce goods and services either to fulfill their own needs or society. In the Indonesian dictionary (1991: 927), workforce is people who work or do something, people who are able to do work both inside and outside work relationship.

Home industry gives the chance of absorbing the workforce as well as improving the economy in the family. This could also be the additional income alternative in the family. Furthermore, Kimbal 2015 added that home industry as a family activity is consumptive and productive units consisting of at least two members of the same household, jointly borne the burden concerning work, food, and place to live.

The process in a production must be designed and developed because poorly designed work can cause inconsistency in a product. For this reason, it is necessary to make a fixed and standardized procedure, so it does not change at all despite whom, when, and where the steps are taken. These orderly steps are called SOPs (standard operating procedures) (Schiffmann and Kanuk, 2000). Fish meatballs at NM Food are subject to SNI 7266: 2014, where the raw materials for fish come from Surimi which is produced by PT Namkyung. Kurimi. They have obtained a Certificate of Healthy worthiness No.3328/440/17/020/111/2018, Halal No. 15020007371112, SKP No.0502/33/SKP/SR/V/2017, HACCP No.066/SM/HACCP/PB/09/17. The process of fish meatball production starts with the receiving of surimi raw materials,
melting, grinning, mixing spices, kneading, maintenance of cooling, sorting, packaging, weighing, and freezing (for frozen fish meatballs). An SOP must have an accurate description of the event process and its control, including (1) There is a list of materials and components of a process with minimal quality characteristics; specifically there is an explanation of the number of standard components used; (2) There is a complete description of the component (sample) which must be prepared before the work is carried out consisting of a description or formulation of a special component or a proper reference including the number and serial number of the component. (3) There is a list of characteristics of equipment such as capacity, precision, limitation, compatibility, an indication of names of special equipment. (4) There is a description of the steps of the events process including the scale or capacity of the operation. (5) There are process, method and success control parameters. Test or observation method which is an effective process control. In addition, the testing must have documentation. (6) There is a workflow diagram. (7) There is testing of effectiveness within the process and after the product, this should be limited and there are criteria that can be accepted by the professional. (8) There are examples of calculation, time estimate, and card list. (9) There are fees, transportation equipment, and a list of disturbing factors. (10) There are executors and accountability; (11) There is leadership accountability. (12) There are reporting and documentation.

The object of the Home Industry Scale in this research is NM Food. NM Food is the home industry in the processing of fishery products located on Jalan Flores, Tegal Timur Subdistrict, Tegal City with a workforce of 2 permanent employees and 2 non-permanent employees. Production in the home industry scale is generally utilizing the existing resources and modest technology.

Its strategic position in the northern coast of Java as a provider of marine products and close to the surimi industry has facilitated NM Food to produce and obtain sustainable raw materials. Good partnership with PT. Namkyung as the provider of surimi which is the raw material of the production becomes the advantage in producing.

NM Food produces diversified fishery products using export quality surimi. In addition, the spices create distinctive taste of the frozen products of NM Food. Diversification can be defined as the development of a product to obtain a new form of high economic value and exceeds the price of raw materials and in the form of processed fishery products. The diversity of processed fishery products is expected to be an attraction for the community to consume fish and other fishery products. In addition, it is also expected to create healthy, nutritious and high-quality new products at affordable prices. Hence, it can increase people’s interest in consuming fishery products (Putra et al 2015). NM Food is a frozen food brand registered at the P-IRT DINKES no: 20632760126 and it also has obtained BPOM RI certificate MD 243211003365 and halal certificate from the Indonesian Council of Ulema (MUI) 03/ST.H/MUI/II/2017.

METHODS OF RESEARCH

The method used to achieve the goal is by identifying and grouping the problems into the aspect of management, production, and marketing of fish meatballs business from UKM NM Food it is then selected based on the priority of the problems as well as the science and technology to be applied to solve the prioritized problems.
RESULTS AND DISCUSSION

Creative industry and Micro, small, and medium-scale business (MSMEs) actors are encouraged to use digital media for publication and marketing of their creative products aside from traditional product publications. “Digital media such as Facebook, Twitter, Instagram, YouTube, blogs and e-commerce have enormous potential as a medium for publishing MSMEs products”, publications traditionally require large costs with limited range. While publication through digital media is very cheap with extraordinary range because it can be seen by anyone both in Indonesia and abroad. With this chance, NM Food plans to do publication and marketing of their creative products through digital media. Here, NM Food can determine the market target, design the publication message, choose publication media and formulate the ways to create business and viral marketing.

NM Food produces processed fish such as meatballs, ekkado, nugget, otak-otak, fish sticks, golden snail, roulade, tofu meatballs, dragon feet, dumplings. These are one of the consumer’s superior product choices. This processed product uses export quality surimi as the raw material and it is processed in accordance with SNI. Surimi is grind fish that has been cleaned and washed several times so that most of the component of smell, blood, pigment, and fat is gone. Surimi is stored in frozen form by adding anti-denaturation (cryoprotectant) (Peranginangin et al., 1999).

Technically, all types of fish can be used for surimi. However, white meat fish does not have muddy and fishy smells. It also has the ability to form a good gel that can produce better surimi (Peranginangin et al., 1999).

The processing of fish meatballs from surimi includes several stages, namely receiving raw materials, preparation of raw materials, thawing the surimi chopping, grinding, weighing amounted to 5 kg, kneading raw materials with spices, steaming using langseng at 100 C for ± 25 minutes, cooling/thinning on aerated draining tables using a fan for 1 hour, packaging using plastic package made from polyethylene (PE), frozen storage at -180C and distributing and marketing fish meatballs. For 5 kg of surimi raw material and 1.5 kg of complementary material will produce as much as 6.5 kg of meatballs or 442 fish meatballs which will be marketed in 250-gram packages.

Organization structure of NM Food is not too complicated. NM Food is an MSME led and owned by M. Adib ZN, he has 2 expert staff to help him consisting of 2 permanent employees and 2 temporary employees. All of the procurement of the raw materials is carried out by the owner with the help of the expert staff, in the case of sudden order in large quantity. This business is a joint venture in which the owners and experts are husband and wife.

The principle is that each part of the organizational structure has their own duty and responsibility for their work. The duty and responsibility of each part are as follows:

The Director has the right to receive reports about every event happening in NM Food. The director has the duty to develop the company he owns.

The expert staff has the obligation to instruct and observe the daily operational activity of NM Food related to general problems in NM Food such as logistics and technician. Expert staff are responsible for the smoothness and improvement of the production, preparation and implementation of work programs based on work guidelines, supervising activities regularly for production, supervising the use of raw materials, monitoring production results, making production reports, observing the quality of produced products to ensure that they are in accordance with the quality
determined by national standards agency. They are also responsible for reporting product quality and testing product samples.

The number of employees is 2 permanent employees and 2 temporary employees. The permanent employee is a permanent employee who is placed as a worker in the processing field and the temporary employee is employed assigned only for sudden order in large quantity. The salary for permanent and non-permanent employees is given once a week including the basic salary and food allowance. Working days are Monday to Saturday. Working hours are calculated from 8 AM to 4 PM WIB and rest hours start from 12 AM until 1 PM WIB. Each employee will receive overtime pay as stipulated by NM Food if they have to work more than the specified working hours. Most of the workers at NM Food reside in the area around NM Food with different educational backgrounds. Education level ranges between Junior and Senior High Schools. Most of them do not have special expertise in the fishery, they mostly know directly by working which is in accordance with work distribution directed by NM. For the welfare of employees, NM Food provides several facilities in order to improve employee performance other than a fixed salary. The facilities are in the form of meal, overtime pay, work leave, allowances (Holiday Allowance and health allowance), and work equipment (work uniform, gloves, headgear, and sandals).

Facilities are an important element in production activity. Facilities are used for the continuity and smoothness of production. Processing facilities can be in the form of equipment and tools that support the production process. The facilities at NM Food are categorized into building and production facilities.

NM Food has a building next to the house where the owner lives. The production building is right next to the owner’s house consisting of several spaces such as a living room, processing room, storage room for raw materials and supporting materials such as packaging, minilab, toilet equipment warehouse and finished products. According to Wibowo (1998), processing building will determine the smoothness and success of the processing. Planning for processing building should pay attention to the following:

a. Enough space for equipment, installation, and other facilities;
b. Processes that are contaminating each other should be separated;
c. Adequate lighting and ventilation;
d. Available adequate facilities for preventing insects and rodents;
e. Setting and arrangement of room layout are directed to facilitate the flow of processes and reduce the risk of contamination of the final product.

2. Production facilities. Production facilities are everything used during the production process. Production facilities use to help the smoothness the production process in the form of equipment and supplies that support the production process. The production facilities owned by NM Food are as follows:

a. Grinder. Meat grinder tool serves to smooth the raw material to obtain soft meat. Hence, it is easier to knead in the kneading process. The tool used in the meat grinding process can be said to be semi-modern. Human labor is still needed to assist in the process of putting raw materials into the chopper knife and compactor. This tool has an electric dynamo which is made of stainless steel.

b. Mixer. A mixer is a device used to mix raw materials and other additional ingredients. The mixer is made of stainless steel. This tool uses power derived from an electric dynamo as its driver.

c. Manual scale. Digital scale is used to weigh of the raw material to be used. In addition, the manual scale is also used to weigh tapioca flour, herbs, and fish. This scale has an accuracy of 1 g with a height of 10 cm and it is Nagata branded.
d. Fish nugget printer. This tool is used to print the fish nugget dough. It is made of polyethylene with a height of 50 cm and 20 square holes. This tool is lubricated with cooking oil on all of its parts before use. The purpose of the lubrication of this cooking oil is to prevent the dough from sticking to the plastic. Thus, it will be easier to move it into the steamer.

e. Knife. The knife is used to slice spices. The knife is made of stainless steel with a variety of shapes depending on the needs. This knife has a length of 22 cm and a width of 3.5 cm. The knife is used during the process of handling raw materials and for cleaning supporting materials such as onions.

f. Langseng. It is useful as a container of fish nuggets dough that will be ready to be steamed on the stove. Langseng is made of stainless steel with a width of 42 cm and a height of 10 cm. Langseng has a perforated base which aims to spread the steam to the steamed products on the stove for 20 to 25 minutes and each langseng consists of 3 layers with the lowest part containing water and for the second and third arrangement having a hollow base. One langseng stack can hold ± 55 fish sticks during steaming.

g. Electric scale. The electric scale is used to weigh spices and fish stick products during packaging. This scale has an accuracy of 0.1 gr. It is Quattro branded with 30 cm long and 23 cm wide.

h. Production table. The working desk used in the production process is made of stainless steel with a length of 100 x 60 x 200 cm. This table can be used to print fish dough and to package fish products.

i. Draining table. A draining table is a tool that serves as a place to drain and dry fish products. At this table, the product is drained. The slicer table used is made of stainless steel in a rectangular shape with a size of 100 x 60 x 200 cm.

j. Adhesive. This tool is used when packing the fish products. The function of this tool is to stick the product packaging plastic to avoid product contamination with water, air, and dirt from outside. This machine uses electricity as a heating element in which it will later be used to stick plastic packaging.

k. Freezer. A freezer is a tool used to store packaged and ready-to-market products. This tool has a height of 205 cm front width of 135 cm side width of 70 cm. It is SHARP branded. The storage process is carried out regularly in such a way. Product storage capacity that can be accommodated by this freezer is 100 kg. NM Food uses 3 freezers in which they are all top loading freezers.

o. Fan. This tool has a diameter of 60 cm which is used to help the slicing process. Hence, it can be alternately used for products that have been steamed. This tool is placed on the table for a quick draining process.

According to Kotler Bowen and Makens (2002) in Wijaya, 2006, market segmentation is the determining the buyers of the same group of needs and desires. This division of groups must be seen by the seller as part of achieving high sales figures. This segmentation can be seen from various factors, among others

a. Geographical Segmentation. Geographical segmentation is a segmentation that divides the market into different geographical units such as countries, autonomous regions, cities, climates, or residential areas.

NM Food has been visited several times by various agencies. They came to see the production process to sales through internship and comparative study. They are from FAFI, Department of Fisheries of Tegal, Department of Fisheries of Probolinggo East Java and internship students from APS Sidoarjo, East Java and UNDIP Semarang, Central Java. This indicates that NM Food products are getting famous by the general public. Hence, the target market can be wider.
b. Demographic segmentation. Demographic segmentation is a segmentation that divides the market into various groups based on variables such as age, gender, family life cycle, income, employment, education, religion, race, and nationality.

Demographic segmentation has broad criteria from gender, age, religion to employment. Processed fish products are served by frying because most children prefer savory foods. Thus, dragon feet and ekkado are categorized for children segment, while older people prefer steamed products such as dumplings.

c. Behavioral segmentation. This segmentation classifies buyers based on knowledge, attitude, level of use of a product or service, and benefits sought by consumers in buying a product or service.

Behavioral segmentation is grouped according to the attitude and level of knowledge. With a variety of products that are widely preferred by the wider community, most Tegal residents are used to consume fish and they like all types of processed fish from NM Food. On the other hand, slawi residents prefer golden snail and nugget with no fishy aroma because they rarely eat fish.

d. Psychographics segmentation. This segmentation divides consumers into different groups based on lifestyle characteristics and consumer personality. Most of the NM products are targeted for lower-middle class because they offer the product price that can be afforded by people from lower class society. The market price ranges from Rp. 1000,- and Rp.3000,- these products are mostly packed for healthy snacks in the cafeteria - school canteens and for snacks for office employees. These NM products are intended for people with a practical and healthy lifestyle, especially for working mothers. The reason is that it will make it easy to prepare a practical healthy breakfast menu for their baby. Hence, NM Products are suitable for the lifestyle and personality of the active buyer with high mobility.

Practical lifestyle is the choice of processed food products from NM Food where there is no need to process raw materials to be able to eat dumplings. Costumers only need to reheat or steam these processed fish products and they can enjoy the delicious fish dumplings within 10 minutes.

Market segmentation must be carefully examined in order to determine the target market. This target market will determine the seller from the production to sales. Hence, the seller can predict what characteristics the buyer wants through this target market, even though all segments are not met.

NM Food is a growing brand with the domestic target market. Supported by the various benefits mentioned above, NM has the opportunity in the frozen food business that can fulfill daily nutrition. High nutrient content, omega 3 and DHA from fresh fish are one of the reasons why this processed fish will be able to improve anyone’s intelligence.

The sales targets are both from direct selling and custom order such as at weddings, patients in clinic or hospital or patients with a special diet or catering services where the size and shape can be adjusted to demand catering and other consumers. This type of customer tends to choose 10 pieces of 250 grams, while for the patient’s menu usually contains 5 pieces of 250 grams. There is a package of 6 pieces of 250 grams for fish roulade product. On the other hand, packaging also shows market segmentation. Standard packaging of rectangular plastic for the retail selling of middle to lower class and standing pouch for the retail selling of middle to upper class.

It is important to always pay attention to the quality of products to further develop the product. Thus, NM food always chooses fresh fish and does not change
the composition of other ingredients even during the increase of basic commodities prices.

Product position is the way the product being defined by consumers based on a number of attributes, or where certain products are relatively considered by consumers against competing products. In other words, positioning is about how a company’s brand can get into and control the customer’s mind. Determination of position is not an activity that marketers do to products. It is an activity carried out by marketers to the minds of prospective customers. Hence, the position of the product can be properly embedded in the minds of customers.

With the slogan of becoming smarter by eating fish, NM tries to position the produced product or the business by attaching the brand to the customer’s mind. Hence, the customer’s imagination will bring him to NM whenever they eat fish. They will start thinking about NM as a brand that produces various processed food made from high-quality fresh fish at affordable prices. Hence, deeper consumer’s impression for NM is a fish processed products. A distinctive feature of processed fish products from NM Food is a special spice that blends with fish meat making the fish taste more delicious with a fresh aroma.

There are many kinds of processed fish products, but NM Food strives to maintain quality and ensure the food safety of its products. Determination of raw materials, processing of products until post-production that implements GMP, SSOP, and HACCP have ensured that the product quality is always maintained. This quality assurance can be indicated by the P-I RT DINKES no: 20632760126, RI BPOM certificate MD 2432 11003365, and HALAL certificate from MUI 03/ST.H/MUI/II/2017.

CONCLUSION

The processing of fish meatballs from Surimi includes several stages, namely receiving raw materials, preparation of raw materials, thawing the surimi chopping, grinding, weighing amounted to 5 kg, kneading raw materials with spices, steaming using langseng at 100 C for ± 25 minutes, cooling/thinning on aerated draining tables using a fan for 1 hour, packaging using plastic package made from polyethylene (PE), frozen storage at -180C and distributing and marketing fish meatballs.

Fish meatballs from Surimi can last for two days when stored at room temperature (250C), it can last for 30 days if stored in refrigerators with a temperature of 0-50C and it can last for one year if stored in a -180C freezer. Factors that can affect the quality and durability of fish meatballs include the freshness of raw materials, the composition of seasonings, the process of handling, and storage of products;

The processed fish production process at NM Food is subject to the national standard of processing fish meatballs in which they have met health standards issued by the Public Health Office with the number P-I RT 20632760126 and BPOM RI certificate MD 243211003365 and halal standard issued by the Indonesian Ulema Council (MUI) 03/ST.H/MUI/II/2017.

One of the obstacles faced by the company includes the lack of promotion of processed fishery products that have been produced. Thus, they cannot compete in the wider market.

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