Marketing mix development analysis of preserved Mackarel tuna (*Euthynnes affinis*) on customer satisfaction in Malang, East Java, Indonesia

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Abstract. Knowledge on consumer awareness can offer some marketing recommendations. Various factors of interpretation and expectation can influence the complexity to fulfill daily needs. Consumer behavior in purchasing will reflect their response to product, price, promotion, place, and people. Examining consumer behavior will assist in product development, pricing, distribution, promotion, and improving the quality of market. This research was aimed to investigate: 1) the expectations and perceptions of consumers, 2) the impact of each marketing mix indicator of consumer satisfaction, and 3) the dominant marketing mix variables. The consumer expectations of quality standards of preserved Mackarel tuna fish were described based on the color, appearance, shape, temperature, texture, flavor, ripeness, and taste of preserved Mackarel tuna. The results showed that marketing mix influenced about 61.4% of customer satisfaction on preserved Mackarel tuna fish (*Euthynnus sp*) in Malang. Partially marketing mix that includes product, promotion, place, and people significantly influenced the consumer satisfaction. The most dominant marketing mix in consumer satisfaction was a product.

1. Introduction

*Anything you catch in the sea is lawful for you, and so is all food from it (Q.S 5: 96).* Indonesia is one of the biggest fish producers in the world. Although Indonesia has enormous fish resources but not all regions can fulfill their needs of fish. Therefore, equal distribution is required so all the consumer can receive good quality fish products and maintains consumer satisfaction [1].

One of the home industries in fisheries processing is preserved Mackarel tuna fish, which has been known by the community for a long time. The demand for preserved Mackarel tuna fish in Indonesia has promising prospects. Generally, a preserved Mackarel tuna fish business aimed to obtain maximum profits. According to Kolter (2004) [2], marketing is a social and managerial process in which individuals and groups obtain, offer, and exchange valuable products with other parties. Marketing activities consist of four components called 4P (marketing mix), which stands for product, price, place, and promotion. Fulfilling each of those components are essentials for the consumers. For this reason, this study surveyed the preserved Mackarel tuna fish marketing in East Java, especially in Malang. In terms of the policy, it is also essential to pay attention to the welfare of producers which means they will benefit economically and promote the expansion of their businesses [3].

Knowledge of consumer behavior, especially to see how customer satisfaction can have an impact on products, can provide meaningful insights into marketing strategic planning. It is also useful for identifying opportunities and threats to the diversity of market development. In fulfilling daily needs, there are several factors influencing consumers, namely perception, attitude, personality, self-concept, learning, and motivation. Consumer behavior in purchasing reflects their response to strategic forms.
of product marketing, prices, promotions, and others. It will help marketing managers determine prices, design distribution, diversify, and develop products and how to do the right promotion so that customer satisfaction can be achieved [4].

Preserved Mackerel tuna fish in Malang is one of the well-known fish products with high demand. It encourages the researchers to identify the factors leading to high consumer demand for preserved Mackerel tuna fish products. However, its high level of demand does not reflect the satisfaction of the customers.

Based on this consumer behavior, the purposes of this research were to investigate; 1) the expectations and perceptions of consumers, 2) the impact of each marketing mix indicator of consumer satisfaction and 3) which marketing mix variables are dominant.

2. Methodology
2.1. Method
To investigate the consumer behavior, questionnaire, interview, and observation were used. Data consisted of primary and secondary data. Descriptive qualitative analysis aimed to describe the state of an object and identify the symptoms of an event both the nature of the individual/group, circumstances, specific symptoms or the frequency of particular relationships between one another [5].

The research type used was explanatory research. According to Singarimbun and Effendi [6], explanatory research explains the relationship between research variables through hypothesis testing that has been formulated previously.

Primary data relating to this research were: 1) Data relating to instruments of perception and expectations of preserved Mackerel tuna fish products (Euthynnus sp.), 2) Data relating to instruments, a marketing mix strategy that includes products, prices, places, promotions, and people also 3) Data relating to customer satisfaction of preserved Mackerel tuna fish (Euthynnus sp.).

The primary data collection were done as follows: 1) observation is an activity that included an object with direct observation, 2) The interview is a dialogue conducted by the interviewer to obtain information from the interviewer and 3) A questionnaire is several written questions that are used to obtain information from respondents.

Secondary data was obtained through other parties, not directly obtained by researchers from the research subjects. Secondary data included the order of elements in preserved Mackerel tuna fish, strategy development, regional topographical conditions. Data obtained from other agencies, i.e.: trawang preserved Mackerel tuna fish processing business (Euthynnus sp.), market or traders of preserved Mackerel tuna fish (Euthynnus sp.), literature study and agencies related to this research.

The number of population in Malang City in 2017 was 798,104 [7]. According to Widayat and Amirullah [8], the sample is a subgroup of the population selected in the study. The sampling used the linear time function formula, \( T = t_0 + t_1n \). In this formula, the number of samples is calculated based on the effective time used for the analysis, even though the population is known. With the following formula \( n = \frac{T - t_0}{t_1} \). Based on the formula, it can be determined that the number of samples/respondents taken in this study was 38 people. The respondents were from Malang, who understood about preserved Mackerel tuna fish products (Euthynnus sp.) and had ever purchased and eaten preserved Mackerel tuna fish products.

2.2. Operational definition
The variables measured were:

2.2.1. Perception and expectation
The variable used to measure perceptions and expectations of preserved Mackerel tuna fish was a standard variable of preserved Mackerel tuna fish quality. Consumer expectations are what consumers want to get, and consumer perceptions are what consumer thought [9]. Gap between consumer expectations and perceptions of items from fish quality standard preserved Mackerel tuna fish was investigated. Quality standard factors that influence preserved Mackerel tuna fish, i.e., color, appearance, shape, texture, flavor, level of maturity, and taste.

2.2.2. Marketing strategy (X)
The marketing strategy is based on the perspective of what is expected by consumers in the future. The marketing strategy includes the marketing mix which then applied in the dimension of marketing strategy. Independent variables in this study were: product ($X_1$), price ($X_2$), promotion ($X_3$), place ($X_4$), people ($X_5$) [10].

2.2.3. **Consumer satisfaction ($Y$)**
Customer satisfaction or customer dissatisfaction is the customer's response to the evaluation of the discrepancy or disconfirmation between the previous expectations, and the actual performance of the product felt after its use [11].

2.3. **Data analysis**
2.3.1. **Analysis of perception and expectation**
To analyze the perceptions and expectations of consumers, the following methods were used, i.e.: a) Frequency Distribution ($F_i$) is for summarizing in the form of a table and a group of data of respondents nd b) Mean ($X$) is obtained by summing all data of respondents divided by the number of data.

2.3.2. **Multiple regression analysis**
A common form of multiple regression equation is as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + \ldots + e$$

where: Customer satisfaction ($Y$) is dependent variable, $a$ is coefficient constant, whereas product ($X_1$), price ($X_2$), promotion ($X_3$), place ($X_4$), and people ($X_5$) are independent variable.

2.3.3. **Coefficient of determination ($R^2$)**
The determination coefficient ($R^2$) is basically used to measure how far the ability of the model in explaining the dependent variable [12].

2.3.4. **F Test**
The F test was carried out in order to find out how the influence of the independent variables on the independent variables together (simultaneous [12].

2.3.5. **t-Test**
The t-test is used to test whether the hypothesis question is correct. T statistic test shows how far the effect of an independent variable individually in explaining the dependent variable (partially) [12].

3. **Results and discussion**
3.1. **Respondent characteristics**
This research was conducted on a specified day. Respondents were buyers of preserved Mackerel tuna fish products (Euthynnus sp.) in Malang, East Java and can be grouped as follows.

3.1.1. **Gender**
Distribution of respondents by sex is shown in Figure 1.
Figure 1. Respondents by sex

Figure 1 showed that the majority of respondents were 82% female and 18% male. Gender is an important aspect to be observed as both male and female, has different interest in goods and services.

3.1.2. Marital status
The distribution of respondents based on marital status is as shown in Figure 2.

Figure 2. Respondents by marriage status.

Figure 2 showed that single respondents were 29%. While respondents with married status reached 71%. Usually marital status has different stress levels and mobility of activities, it also influences the consumers’ decision in buying Mackerel tuna preserved fish.

3.1.3. Age
Distribution of respondents based on age is as in the following Figure.

Figure 3. Respondents by age.

Figure 3 described age-based respondents only consisted of three age groups namely 20’s, 30’s, 40’s. In general, the range of the age is divided into three parts, namely: 1) Young (<20-29 years old), 2) Adults (30-39 years old) and 3) Mature (40-49 years old).

3.1.4. Expenditure level
Group of respondents was also classified based on the level of expenditure. The highest and most dominant distribution was at the level of expenditure under Rp. 750.000.00 to Rp. 1.499.999.99 by 48%. According to the amount of expenditure, the respondents were included in the low socioeconomic level. The description of respondents based on expenditure levels is shown in Table 1.

| No | Expenditure Level (Rp) | Amount (%) |
|----|------------------------|------------|

Table 1. Respondents based on the amount of expenditure per month.
3.1.5 Frequency of purchase
The distribution of respondents based on the frequency of purchases, as shown in Figure 4 below.

The relation between the level of customer satisfaction with the purchase intensity of a related item is very close. The more purchase intensity, the higher chance of consumer satisfied with the product offered. Figure 4 shows that customer most customer repeated to buy the preserved Mackerel tuna fish in once a week.

3.2 Analysis of perception and expectation
The variables measured in analyzing the perception and expectations of the Mackerel tuna preserved fish quality were color, appearance, shape, temperature, texture, scent and ripeness. Based on the distribution of respondents or consumers of preserved Mackerel tuna fish in Malang, gap between perception and expectations is presented in Table 2.

Table 2. Gap between mean expectations and consumer perceptions.

| Variable | Mean P | Mean H | Gap (P-H) |
|----------|--------|--------|-----------|
| Color    | 3.131  | 3.816  | -0.685    |
| Appearance | 2.737 | 3.868  | -1.131    |
| Shape    | 3.079  | 4      | -0.921    |
| Temperature | 2.974 | 4      | -1.026    |
| Texture  | 3.289  | 4.053  | -0.764    |
| Flavor   | 3.316  | 3.974  | -0.659    |
| Level of | 3.210  | 4.105  | -0.895    |
| Maturity | 3.210  | 3.868  | -0.658    |
| Taste    |        |        |           |

Source: Questionnaire data, processed

Table 2 showed that all gaps are negative. It means that the value of perception is smaller than expectations. The taste variable had the smallest gap, which referred to the specific taste of preserved Mackerel tuna fish namely tasty, not too salty, evenly salty, and there is no foreign taste (expired) with value -0.658. The most significant gap is in the performance variables of preserved Mackerel tuna fish was packaging, branding, and supporting labels can protect the contents of the product and make the product looks interesting with value -1.13. Perceptions smaller than expectations (P<H)
means consumers will give a contrary assumption of the product had received. So, it can be concluded that consumers are not satisfied with the standard quality of preserved Mackerel tuna fish (*Euthynnus sp.*) in the marketing area of Malang city.

3.3. Effect of marketing mix on consumer satisfaction

3.3.1. Multiple regression analysis

Multiple regression analysis was done using the SPSS program and the results obtained showed in Table 3.

| No | Variable          | Coeff Regression | Sig. | Significant |
|----|-------------------|------------------|------|-------------|
| 1  | Konstanta         | 0.000            |      |             |
| 2  | Product (X1)      | 0.621            | 0.006| Yes         |
| 3  | Price X2          | -0.188           | 0.335| No          |
| 4  | Promotion X3      | 0.134            | 0.266| No          |
| 5  | Place (X4)        | 0.309            | 0.025| Yes         |
| 6  | People(X5)        | 0.070            | 0.577| No          |

AdjustedRSquare: 0.614
f-account:12.782
f-table:4.46
t table:2.028

Thus the regression equation obtained was \( Y = 0.0003 + 0.621 X1 + (-0.188) X2 + 0.134 X3 + 0.309 X4 + 0.070 X5 + e \)

3.3.2. Coefficient of determination \((R^2)\)

The coefficient of determination can be seen from the value of Adjusted R Square as contained in the Summary Model table of the results of the regression analysis of 0.614. It means that 61.4% of consumer satisfaction with preserved Mackerel tuna fish (*Euthynnus sp.*) in Malang (dependent variable) was influenced by the marketing mix (independent variable) which includes products, prices, promotions, places and people, while the remaining 38.6% (100% - 61.4%) were influenced by other variables not examined in this study.

3.3.3. F Test

The F test is also used to prove the first hypothesis. It was assumed that there was a significant influence between the marketing mix (product, price, promotion, place, and people) on the satisfaction of Preserved Mackerel tuna fish (*Euthynnus sp.*) consumers in Malang using the hypothesis:

- If F-count > F-table, then \( H_0 \) is rejected and \( H_1 \) is accepted
- If F-count < F-table, then \( H_1 \) is rejected and \( H_0 \) is accepted

The calculation of F value can be seen in Table 4.

| Model      | Df | F    | sig    |
|------------|----|------|--------|
| Regression | 5  | 12.792 | 0.0005a|
| Residual   | 32 | 4.46  |        |

Based on Table 4, the calculated F value is 12.792 with a significant level of 0.0005. Meanwhile, to obtain the F table value using a statistical table by looking at the Df regression and residual model values contained in the regression results table. The regression value of Df that has been obtained is 5, and the residual value is 32, so that the F table is 4.46 at a significant level of 1%. To prove the above hypothesis, it is done by comparing F count with F table. From this value it can be seen that the calculated F value > F table (12.792 > 4.46) or probability (0.0005 < 0.01) which means that the hypothesis \( H_0 \) is rejected and \( H_1 \) is accepted, it shows that the marketing mix consisting of products,
prices, promotion, place, and people altogether have a significant effect on consumer satisfaction of preserved Mackerel tuna fish (*Euthynnus sp.*) in Malang.

3.3.4. t-Test
This t test was done by comparing the value of t-count with t-table. This test was conducted to determine the effect of independent variables separately (partially) on the satisfaction of consumers of preserved Mackerel tuna fish (*Euthynnus sp.*) in the city of Malang.

The hypotheses that can be taken from this test are:
- If t-count > t-table, then H0 is rejected and H1 is accepted
- If t-count < t-table, then H1 is rejected and H0 is accepted

Calculation of t value can be seen in Table 5.

| Variable     | t-account | t-table | Sig  |
|--------------|-----------|---------|------|
| Product (X1) | 2.961     | 2.028   | 0.006|
| Price (X2)   | -0.979    | 1.688   | 0.335|
| Promotion (X3) | 1.133     | 1.688   | 0.266|
| Place (X4)   | 2.352     | 2.028   | 0.025|
| People (X5)  | 0.563     | 1.688   | 0.577|

Based on Table 5, t table value is using a statistical table with the formula (n-2, α / 2) that can be obtained (38-2, 0.05 / 2) (38-2, 0.10 / 2), so that the t table values are 2.028 and 1.688. Partial testing of each variable is as follows:

3.3.4.1. Product (X1)
T value is 2.961, where the value of t count (2.961) > t table (2.028). It shows that the hypothesis H0 is rejected and H1 is accepted. Partially, product variables have a significant effect on consumer satisfaction with preserved Mackerel tuna fish (*Euthynnus sp.*) in Malang. It because the consumers of preserved Mackerel tuna fish in Malang, when they purchased, had an orientation on the quality of the fish products. According to Primyastanto et al. [13], consumers can see the quality of the product from its looks. Starting from its luminous fish (the overall skin color looks brilliant), bright red gills, rigid and solid bodies, smells like fresh fish, clear and bright fish eyes, springy flesh, clear eyes, strong fins, to strong abdominal walls. Besides, consumer satisfaction with the product also influenced by the packaging of preserved Mackerel tuna fish that has attractive packaging designs (shapes, materials, and colors) and can protect the contents and the taste of the product safely and hygienically.

3.3.4.2. Price (X2)
T value calculated was -0.979, where the value of t count (-0.979) < t table 1.688). It shows that the hypothesis H0 is accepted and H1 is rejected. Partially, the price variable has no significant effect on consumer satisfaction of preserved Mackerel tuna fish (*Euthynnus sp.*) in Malang. Price does not affect the satisfaction of customers in Malang. Preserved Mackerel tuna fish are the main food (food side dishes) for consumers, so they are not affected by price factors. Besides, the data distribution showed that most respondents are at a low-status economic level. Nevertheless, the price level of the product in Malang is appropriate with the quality and the size.

3.3.4.3. Promotion (X3)
The t value for promotion was 1.133. As the value of t count (1.133) < t table (1.688), the hypothesis H0 should be accepted and H1 was rejected. Partially, the promotion variable has no significant effect on consumer satisfaction of preserved Mackerel tuna fish (*Euthynnus sp.*) in Malang. The producer promotion in Malang was relatively good by which through information from person to person or by word of mouth, as well as information explained from the seller to consumers in purchasing time. Expanding modern promotional networks such as promotion through participating in exhibitions, promoting through the distribution of brochures to housing, product demonstrations, posting
3.3.4.4. Place (X4)

T value is 2.352, in which the value of t count (2.352) > t table (2.028). It shows that the hypothesis H0 is rejected and H1 is accepted. Partially, the variable place has a significant effect on consumer satisfaction of preserved Mackerel tuna fish (Euthynnus sp.) in Malang. It happens because the place for selling preserved Mackerel tuna fish in Malang was easy-access. Consumers consider that preserved Mackerel tuna fish (Euthynnus sp.) is easily found everywhere. According to Primyastanto [15], Malang City has 5 sub-districts, in which each district has a large-scale traditional market, a mobile vegetable trader (sells preserved Mackerel tuna fish too), a mobile preserved Mackerel tuna fish trader, and a preserved Mackerel tuna fish trader in a store selling preserved Mackerel tuna fish as a vegetable companion.

3.3.4.5. People (X5)

T value of people was 0.563, so the value of t count (0.563) < t table (1.688). It shows that the hypothesis H0 is accepted and H1 is rejected. Partially, the variable of people did not have a significant effect on consumer satisfaction of preserved Mackerel tuna fish (Euthynnus sp.) in Malang. It can be concluded that the variable of people, which includes the quality and quantity of marketing factors, have not affected the satisfaction of consumers in Malang. How producers often create and present products directly to consumers does not affect their purchase satisfaction. The good producer attitude of preserved Mackerel tuna fish in Malang City, i.e., friendly and skilled in serving consumers, as well as neat, clean and polite appearance, has not yet applied to Malang City consumers so that consumers can not compare their services and impress them.

3.4. The most influential variable on customer satisfaction

Multiple linear regression analysis and T-test employed to answer the third objective of this study regarding the most dominant influential factors on consumer satisfaction of preserved Mackerel tuna fish (Euthynnus sp.) in Malang. By looking at the greatest regression coefficient in Table 3, the biggest correlation coefficient was found in the product variable at 0.621. After processing the data using the t-test and SPSS 16, Table 5 shows that the largest value of t is the product variable of 2.961 with a significant 0.049. Therefore, the value of t count (2.961) > t table (2.028) or (sig t <1%) (0.0005 > 0.01). Product variables have a dominant effect on consumer satisfaction with preserved Mackerel tuna fish (Euthynnus sp.) in Malang city.

4. Conclusion

It can be inferred from the results of the study that analysis of customer perceptions and expectations of the standard quality of preserved Mackerel tuna fish (Euthynnus sp.) products consisting of 8 (eight) items: color, appearance, shape, temperature, texture, aroma, level of maturity, and taste. The smallest gap is the variable taste of preserved Mackerel tuna fish (Euthynnus sp.) of -0.658, and the most significant gap is the performance variable of preserved Mackerel tuna fish by -1.13.

The results of the regression analysis obtained the following equation: Y = 0.0003 + 0.621 X1 + (-0.188) X2 + 0.134 X3 + 0.309 X4 + 0.070 X5 + e, where the marketing mix includes: product (X1), price (X2), promotion (X3), place (X4), and people (X5) altogether affect customer satisfaction. While the price variable was minus, other variables were positive. 61.4% of customer satisfaction with preserved Mackerel tuna fish (Euthynnus sp.) (dependent variable) was influenced by marketing mix (independent variable), which includes product, price, promotion, place, and person. Meanwhile, the remaining 38.6% influenced by other variables not examined in this study. The results of the F Test obtained the value of F count > F table (12.792 > 4.46) or probability (0.0005 < 0.01), which means the marketing mix (independent variable) altogether has a real influence on consumer satisfaction of preserved Mackerel tuna fish (Euthynnus sp.) in Malang.

The variables that have the most dominant influence on consumer satisfaction of preserved Mackerel tuna fish (Euthynnus sp.) are product variables with a regression coefficient of 0.621, where the t value of the product count is 2.961.
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