Consumer preference of processed food products: study on livestock products

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Abstract. Food processing of livestock products such as meat and milk develops along with the development of the food processing industry. These foods include frozen, pasteurized, fried, condensed, dried, and canned food. This study aims to analyse the consumer preferences and the influence factor of processed food products. Primary data were collected from 360 sampled consumers. This study clearly indicates that 50 percent of respondents preferred processed food products. Nearly one-third of samples respondent (34.2%) all purchased of processed food products on once a week. Majority respondent was purchasing processed meat food because of quality (43.6%), tasted/prefere
cnce (59.3%), price (27.6%), and following by brand and easy availability. And these situations were also similar patterns with processed food from dairy product. Almost all selected consumer factor characteristics shown significantly related to purchasing milk processed products, while only income is the majority of meat processed food. The results of this study indicate that the food processing industry of livestock products has great opportunities along with the interests and preferences of a consumer.

1. Introduction
The choice of food consumption for livestock products in fresh form has shifted to a processed form. Processed food from livestock products is growing rapidly both variation and quantity demanded. Processed meat products are generally consumed at home - where meatballs, sausages, and nuggets are the most commonly used beef products for home cooking. The consumption of these food products more frequent 1-3 times a week for meat products, while only about 2 times in a month [1]. Consumption of processed meat chicken such as nugget and sausage and milk products is more frequent than beef based products [2].

Result from [3] showed that 46.13% of sampled respondents preferred meatballs, 18.62% chosen meat floss, 15.5% of respondents consumed corned beef, and 10.88% and 8.87% of the respondents preferred sausages and other processed meat products, respectively.

Among the 202 surveyed consumers by [4], 19.84% of respondents were consuming cheese, while only 16.42% and 15.51% preferred yogurt and ice cream, respectively. They also reported that sampled respondents also consumed fresh milk, pasteurized milk about 13.45% and 8.32% of the respondents.

Consumption of processed food from livestock products in Indonesia is about 0.026 kg/person/year for meat floss and 0.521 kg/person/year for sausages, nuggets, smoked meat, and meatballs. Milk-based processed products such as cheese and other dairy products are about 0.074 kg/person/year and 0.074
kg/person/year, respectively [5]. The cause was triggered by the increase in demand for ready-to-eat food, because the busyness was increasingly plaguing many people.

The demand for processed meat is projected to increase. This estimation is also supported by the population that will boost demand and increases the production of processed meat. Then the urbanization factor and lower costs due to the use of the latest technology in the processing process. The determinants factors for dairy product preference are price, habits, health, taste, smell, and fat content [6].

The processed meat and milk processing industry is one of the industries engaged in livestock sector. The growth of domestic meat processing industry is about 10-15 percent. Increasing demand and changes in people's lifestyles that switch to fast food are the triggers for the growth of processed food. The market potential for processed meat and milk products such as smoked beef, meatballs, nuggets and sausages, and milk products such as cheese is huge.

2. Method

This research is based on primary data. For collection of primary data a well-structured questionnaire was prepared, a pilot survey was conducted to know the feasibility of the questionnaire, suggestions from this pilot survey were included in the questionnaire and final draft of questionnaire was prepared.

The questionnaire was formed by two parts. The first part is consisted of questions covering the meat and milk products consumption and purchase attributes and the second part is about the socio-economic and demographic situation of the respondents. To determine the consumption and purchase preference the participant evaluation was designed with 4-point type scale to express how much they agree or disagree with the statements.

All the data collected from the survey were tabulated in well-structured statistical tables, and results have been derived from these tables. Both quantitative and descriptive analyses were taken to answer research problems. Various statistical tools and techniques were used to analyze the data. Differences in the frequency of consumption of processed animal products were measured by non-parametric chi-square statistics.

3. Result and discussion

3.1. Consumer profile

Characteristics of sampled respondent are shown in Table 1. Out of the 360 respondents surveyed, 60.8 percent were female. The age composition of the sampled respondents indicates that the surveyed group is matured enough to respond on various food consumption issues. Out of the total surveyed consumers, more than 60 percent of the respondents were between 18 to 33 years of age.

The educational profile of the respondents shows that most of them have graduate level or higher qualifications. Only 30 percent of the respondents are from the secondary level and below. The composition of the number of respondents based on the level of education is dominated by the level of undergraduate education. On average, respondents took 17.52 years of formal education. Productive age experiences a growth phase so that it still requires high nutrition which can be met from food [7]. Sample households falling between the monthly income group of Rp 2,100,000 - 6,000,000 dominated, with a 44.2 percent share, with average income IDR 4,227,083.33
Table 1. Characteristics of samples respondent

| Category               | Frequency | Percentage |
|------------------------|-----------|------------|
| Age (year)             |           |            |
| 18 - 25                | 245       | 68.10%     |
| 26 - 33                | 37        | 10.30%     |
| 34 - 41                | 29        | 8.10%      |
| >42                    | 49        | 13.60%     |
| Gender                 |           |            |
| Male                   | 141       | 39.20%     |
| Female                 | 219       | 60.80%     |
| Education Level        |           |            |
| Basic school           | 109       | 30.30%     |
| Undergraduate          | 213       | 59.20%     |
| Postgraduate           | 38        | 10.60%     |
| Monthly income         |           |            |
| ≤ Rp 2,000,000.00      | 105       | 29.20%     |
| Rp 2,100,000.00 – Rp 6,000,000.00 | 159 | 44.20% |
| Rp 6,100,000.00 – Rp 10,000,000.00 | 96 | 26.70% |

3.2. Preference of processed products

Consumers have many choices when they choose products to consume, especially food products. They can get the product of their choice in good quality with convenience in the market. There are various types of consumer preferences for various types of livestock food products, both fresh and processed. Processed food products vary widely depending on the source.

Consumer preferences for processed food, whether derived from meat products or dairy products, are expressed in the average score of the level of preference for the types of processed meat and dairy products food. The following is the distribution of consumer preferences for these products food illustrated in Figure 1.

It can be seen from the average consumption preference of the most frequently choosing are sausage, meatball, and nugget. Respondents’ preferences for food products processed by livestock in this study consist of positive perceptions of processed livestock products and negative perceptions of processed livestock products. Positive perceptions are in the form of positive reasons for consuming processed livestock products, while negative perceptions are in the form of negative reasons for consuming or not consuming processed livestock products.

The types of processed food that are highly preferred by the respondents in this study are meat products, while the types of food that are included in the preferred category are other foods and those that are in the very preferred category are processed food products. Based on the average preference score of the respondents' preference for processed food types are processed meat products.
Regarding consumer decisions on processed products, economic and psychological factors have an important role in consumer behavior [8]. Increased accessibility, convenience, and customer service enhance consumer perception of the brand [9].

Variety of processed livestock products, both from meat and milk products are shown in Figure 2 and Figure 3 respectively. Majority respondent was purchasing processed meat food because of quality (43.6%), tasted/preference (59.3%), price (27.6%), and following by brand and easy availability. And these situation were also similar pattern with processed food from dairy product (Figure 3).

This makes it easier for consumers to choose from. Either choose based on taste, price, and brand image of each product. As [10] mentioned that priority on choosing processed products are price, quality, variety, packaging, and non-seasonal availability.

3.3. Factors influencing a purchasing decision

Purchasing decision on processed food is related to socioeconomic factors [11]. We observed the relationship between gender, education level, and monthly income factors and the purchasing decision on meat and milk processed meat and milk products (see Table 2).

The results of the chi-square analysis show that gender differences are related to differences in consuming processed food derived from meat and milk products. For instant, we can see that sausage, meatball, cheese, and yogurt are significantly different in association with gender. There is significant difference between male and female preferences for processed food from livestock products. Men preferred milk, yogurt, processed meat products, with p <0.001 than that of females, and vice versa for cheese products.
Food derived from livestock products, especially meat and milk, is sensitive to income [12][13]. It also appears that the difference in income levels play a significant role in the decision of consuming processed food derived from meat and milk products, while only education level showing significantly difference in consuming yogurt. There is no significant difference in respondents' preferences based on the level of education towards processed meat and milk products. It can be stated that the level of undergraduate and graduate education has the same affection for meat and milk processed products. This is also supported by the statement of [14] in his research which states that there is no significant difference between academic status (undergraduate and graduate) on perceptions of dairy products. The factors of determining this can change frequently in psychological, cultural, and tastes and environmental changes [15] [16].

| Category         | Socio-economic characteristics |  |
|------------------|---------------------------------|---|
|                  | Gender  | Education level | Income  |
| Meat processed food |        |                |         |
| Sausage          | 5.37**  | 1.19           | 0.107   |
| Corned beef      | 0.609   | 1.536          | 7.916** |
| Meat ball        | 3.27**  | 0.95           | 0.811   |
| Nugget           | 1.217   | 0.14           | 11.202*** |
| Meat-floss       | 0.628   | 1.84           | 0.004   |
| Milk processed food |       |                |         |
| Cheese           | 17.449*** | 3.112        | 13.511*** |
| Yoghurt          | 5.775*** | 8.09**        | 7.805** |
| Powder milk      | 0.825   | 0.442         | 2.554   |
| Sweet Condensed Milk |      | 1.166          | 2.506   | 0.803   |

4. Conclusion

The preferences and behavior of consumers in consuming food, especially livestock food products, depending on many individual consumer factors, product characteristics, and environmental factors (marketing aspects). Based on the results of the study, the responses of males and females differ significantly on the frequency of purchasing processed milk products, and some of meat products.

Preference for processed products was not shown correlation with Education level of the respondents. As high-value food and elastic with income, consumer response to the meat and milk processed food across income. Results indicate that a higher income and gender influence their decisions on processed products while education seems to have no significant impact.

Respondents with a low income significantly prefer nuggets and sausages, while respondents with a high level of income significantly prefer milk processed products (p-value <0.05). Based on the description above and the average food preference score for processed meat products, it can be stated that respondents with a low allowance rate prefer processed meat products compared to respondents with high allowances.

The findings of the study clearly indicate that this analysis of consumer preferences is expected to be part of the challenges that drive innovation in the processed food industry.
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