

## การตัดสินใจซื้อโยเกิร์ตของผู้บริโภค: กรณีศึกษาเมืองมาลัง จังหวัดชวาตะวันออก ประเทศอินโดนีเซีย

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### บทคัดย่อ

โยเกิร์ตเป็นอาหารที่ได้รับความนิยมเป็นอย่างมากในตลาดอินโดนีเซีย เนื่องจากโยเกิร์ตได้รับการยืนยันว่ามีประโยชน์ต่อสุขภาพ การวิจัยนี้มีวัตถุประสงค์เพื่อ 1) ศึกษาลักษณะทางเศรษฐกิจสังคมของผู้บริโภค 2) วิเคราะห์พฤติกรรมของผู้บริโภค และ 3) วิเคราะห์ปัจจัยทางเศรษฐกิจสังคมที่กำหนดการตัดสินใจซื้อโยเกิร์ตของผู้บริโภคในเมืองมาลัง จังหวัดชวาตะวันออก ประเทศอินโดนีเซีย ข้อมูลปฐมภูมิได้จากการสัมภาษณ์ผู้บริโภคในเขตเมืองและชานเมืองจำนวนทั้งสิ้น 400 คน ด้วยแบบสอบถามแบบมีโครงสร้าง การสุ่มตัวอย่างใช้วิธีการสุ่มแบบหลายขั้นตอน การวิเคราะห์ข้อมูลใช้สถิติเชิงพรรณนาและการวิเคราะห์การถดถอยโลจิสติก

ผลการวิจัย พบว่า ผู้บริโภคส่วนใหญ่เป็นเพศหญิง มีอายุอยู่ในช่วงระหว่าง 15-20 ปี เป็นนักศึกษา บริโภคโยเกิร์ตมากกว่า 2 ครั้งต่อสัปดาห์เป็นระยะเวลา มากกว่า 1 ปี ได้รับข้อมูลข่าวสารเกี่ยวกับโยเกิร์ตจากโฆษณาทางอินเทอร์เน็ตและโทรทัศน์ เหตุผลที่บริโภคโยเกิร์ตคือ เพื่อบำรุงรักษาสุขภาพ ผู้บริโภคส่วนหนึ่งไม่บริโภคโยเกิร์ตเพราะเป็นสินค้าที่พวกเขาไม่รู้จัก ปัจจัยทางเศรษฐกิจสังคมที่กำหนดการตัดสินใจซื้อโยเกิร์ตของผู้บริโภค ได้แก่ อายุ เพศ อาชีพพนักงานเอกชน อาชีพแม่บ้าน รายได้อยู่ในช่วง 1,500,001-2,000,000 รูเปียส์ต่อเดือน (ประมาณ 156-208 ดอลลาร์สหรัฐ) ผลการวิจัยที่ได้นั้น ผู้ประกอบการโยเกิร์ตสามารถนำไปใช้ประกอบการวางแผนการตลาดที่เหมาะสมต่อไป

**คำสำคัญ:** การตัดสินใจซื้อ, การถดถอยโลจิสติก, โยเกิร์ต

## Consumers' Purchasing Decision towards Yogurt: A Case Study in Malang City, East Java Province, Indonesia

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### Abstract

Yogurt is popular food in Indonesia because it is assured to provide health benefits. The objectives of this research were 1) to investigate socio-economic characteristics of consumers, 2) to examine consumers' behaviors towards yogurt, and 3) to identify socio-economic factors determining consumers' purchasing decision towards yogurt in Malang city, East Java province, Indonesia. Primary data were collected using structured questionnaires from a total sample of 400 consumers in urban and sub-urban areas of Malang city. These samples were selected using the multi-stage sampling method. Descriptive statistics and binary logistic regression were applied for data analysis. Empirical results revealed that most surveyed consumers were female students whose ages range between 21-25 years old. They were yogurt buyers who consumed it two times

a week for more than a year. They learnt about yogurt from television/internet advertisement and news. The main reason of consuming yogurt was to keep healthy, whereas the surveyed consumers who didn't consume yogurt due to its uncommon product. Statistically significant variables determining consumer's purchasing decision towards yogurt were age, sex, occupations such as private officials and housewives, income level ranging between Rp.1,500,001-2,000,000 (approximately 156-208 USD) and location. The outcomes can be utilized by yogurt producers to generate their effective marketing strategies for yogurt products.

**Keywords:** logistic regression, purchasing decision, yogurt

## Introduction

Yogurt is famous fermented food in Indonesian markets due mainly to scientific research's indication that consumption of recommended levels of milk and fermented dairy products as part of a healthy diet could contribute and reduce the risk of many diseases (Sandholm and Saarela, 2003). Consequently, the above recommendations induced many yogurt stores in Indonesia to sell various types of yogurts such as frozen yogurt (froyo) and drinking yogurt.

Morey (2011) stated that there were almost 500,000 dairy cows in Indonesia producing about 930,000 tons of milk in 2010. Ninety-seven percent of all dairy cows were located in the three provinces of Java, namely East Java, Central Java and West Java. East Java province is the largest milk producer (57% of total Indonesia's milk production). Over the past five years, East Java Province has shown the highest growth of dairy cow population and milk production, increasing by an average of 14.60 percent and 24.30 percent, respectively

Malang city is famous with the slogan of "Tri Bina Cita" meaning education city, industrial city, and tourism city reflecting profile of its economic potential (Bureau of Statistics Indonesia, 2010). Morey (2011) indicated that Malang city was the highest milk producer in Java island. It produced 146,121 ton of milk in 2010. Number of yogurt stores in Malang city increased by 40 percent in 2011 indicating a substantial increase in demand for yogurt.

Additionally, increasing consumers' income and their consciousness on health have changed consumption patterns not only in terms

of food and energy intakes, but also in their consumption behaviors. Consumer behaviors in the consumption of milk and fermented dairy products have currently changed resulting in yogurt producers to formulate their appropriate marketing strategies so that yogurt products could satisfy their consumers. There are immediate needs to explore consumers' purchasing decisions towards yogurt in order to formulate marketing strategies supplementing health issues of the Indonesian growing population (Urala and Lahteenmaki, 2003 and Bureau of Statistics Indonesia, 2010).

This research aims to (1) investigate socio-economic characteristics of yogurt consumers, (2) examine consumer behaviors towards yogurt, and (3) identify socio-economic factors determining consumers' purchasing decision towards yogurt in Malang city, East Java province, Indonesia. The outcomes can be utilized by yogurt producers to formulate their effective marketing strategies.

### **Materials and methods**

Target population in this research was consumers, both yogurt buyers and non-buyers who live in location of markets/yogurt stores in urban and sub-urban areas of Malang city. The urban areas included three sub-districts, namely Klojen, Lowokwaru and Blimbing sub-districts, whereas the sub-urban areas included Sukun and Kedungkandang sub-districts. The target consumers were in age range between 15-60 years old, both female and male. It was assumed that the consumers in this age range could state their perceptions and opinions about the consumption of yogurt.

In 2009, total population in Malang city who had ages range between 15-60 years old were 530,306 person (Malang City in Figures, 2010). Total samples were 400 consumers which were determined using Yamane (1973) formula and reserving sample error of 5 percent. The samples were divided into 300 consumers for the urban areas and 100 consumers for the sub-urban areas. The proportion of urban:sub-urban samples of 300:100 was considered appropriate because of higher number, more educated, more diversified and more health awareness of urban population than the sub-urban population (Morey, 2011). Multi-stage sampling method was used in this research. They were stratified, quota, judgment, and accidental samplings, respectively. Every third eligible consumers either yogurt buyers or non-buyers in market/yogurt stores was selected for the interview.

The research design was a cross-sectional consumer survey. Primary data were obtained through structured questionnaires. Descriptive statistics such as frequency, percentage, and mean were applied to describe socio-economic characteristics of the sampled consumers and their behaviors. Binary logistic regression analysis was employed to identify socio-economic factors determining consumers' purchasing decision towards yogurt. Coefficients were estimated using Maximum Likelihood Estimation (MLE) (Pindyck and Rubinfeld, 1991). The binary logistic model was specified as follows (Nissapa, 2004; Gujarati and Porter, 2009):

$$P_i = F(Z_i) = \frac{1}{1 + e^{-z_i}}$$

$$Z_i = \ln\left(\frac{P_i}{1 - P_i}\right) \text{ and}$$

$$Z_i = b_0 + \sum_{j=1}^k b_j x_{ij}$$

$$Z_i = b_0 + b_1 \text{AGE}_i + b_2 \text{GEN}_i + b_3 \text{MAR}_i + b_4 \text{EDU}_i \\ + b_5 \text{OCC}_i + b_6 \text{INC}_i + b_7 \text{LOC}_i + U_i$$

Where

$P_i$  is probability of consumers' decision to purchase yogurt,

$Z_i$  is consumers' purchasing decision towards yogurt,  $Z_i$  is 0 representing consumers who do not purchase yogurt, and  $Z_i$  is 1 representing consumers who purchase yogurt,

AGE is age of consumers (years),

GEN is a dummy variable representing gender of consumers, GEN is 1 representing female consumers, and GEN is 0 representing male consumers,

MAR is a dummy variable representing marriage of consumers, MAR is 1 representing married consumers, and MAR is 0 representing single and otherwise consumers,

EDU is number of years in formal education of consumers (years),

OCC is a dummy variable representing occupation of consumers, OCC1 is 1 representing public officials, and OCC1 is 0 representing otherwise; OCC2 is 1 representing private officials, and OCC2 is 0 representing otherwise; OCC3 is 1 representing



businessmen, and OCC3 is 0 representing otherwise; OCC4 is 1 representing housewives, and OCC4 is 0 representing otherwise,

INC is a dummy variable representing income level of consumers (Rp. per month), INC1 is 1 representing income level of 500,001-1,000,000, and INC1 is 0 representing otherwise; INC2 is 1 representing income level of 1,000,001-1,500,000, and INC2 is 0 representing otherwise; INC3 is 1 representing income level of 1,500,001-2,000,000, and INC3 is 0 representing otherwise; INC4 is 1 representing income level of 2,000,001-2,500,000, and INC4 is 0 representing otherwise; INC5 is 1 representing income level is more than 2,500,000, and INC5 is 0 representing otherwise,

LOC is a dummy variable representing location of this research area, LOC is 1 representing urban areas of Malang city, and LOC is 0 representing sub-urban areas of Malang city, and

U is stochastic disturbance term.

## Results and Discussion

The results of this research are presented in the following sections.

### **Socio-economic characteristics of the surveyed consumers**

The respondents in the urban and sub-urban areas were mainly female (64.66% and 63.00%, respectively). This is obviously the fact that more female prefers to go shopping than male consumers. Most urban respondents' ages were in range of 15-20 years old (41.67%) with an average age of 23 years, whereas most sub-urban respondents' ages were in range of 21-25 years old (26.00%) with an average age of 29 years.

Most urban respondents were single (77.33%). In contrast, married respondents dominated in the sub-urban areas (59.00%). Most urban respondents were senior high school graduates (63.66%), whereas sub-urban respondents were junior high school graduates (27.00%). Main occupation of the urban respondents was students (69.00%), while the sub-urban respondents were private officials (29.00%). Most urban respondents earned income ranging between Rp. 500,001-1,000,000 (approximately Rp. 9,616 = 1 USD) per month (52.33%), while sub-urban respondents earned income ranging between Rp. 1,500,001-2,000,000 per month (25.00%).

### **Consumer behaviors towards yogurt**

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Table 1 shows that most respondents purchased yogurt (73.75%). Number of buyers in the urban areas was higher than non-buyers. In contrast, number of non-buyers in the sub-urban areas dominated buyers. It implied that yogurt tended to be more popular in the urban areas than the sub-urban areas of Malang city. It was because of this phenomenon that number of yogurt stores in the sub-urban areas was limited as compared to the urban areas, and the yogurt stores were appropriately located.

The respondents who declared themselves as buyers of yogurt were then asked how often they bought yogurt. Nearly a half of the urban respondents consumed yogurt at least once a week (48.63%). This indicated that yogurt was consumed periodically in the urban areas. The sub-urban respondents consumed yogurt at least once a week (42.50%). The result was consistent with those of Luangbamrung (2007), Soongkitboon (2007) and Jantawee (2008) who found that Thai consumers

consumed yogurt at least once a week. Most of Malang urban respondents had consumed yogurt for at least six months (61.18%), whereas only 50% of the sub-urban respondents had consumed yogurt during the same period.

Table 2 reveals that most respondents in the urban and sub-urban areas obtained information about yogurt through television/internet advertisement and news (70.97% and 72.50%, respectively). It is interesting to note that 67.50% of sub-urban respondents obtained the yogurt information from family or relatives and friends, whereas it was only 37.65% of the urban respondents. The advertisement is currently a crucial strategy to deliver information, knowledge and promotion of the yogurt. This was in line with studies of Phumeekun (2006) and Jantawee (2008) who found that most Thai consumers learnt about yogurt from television advertisement. Chaiuppala (2007) found that television advertisement influenced consumers' purchasing decision towards milk products. Moreover, Lappalainen *et al.* (1998) found that internet became the major sources of health information in Northern European countries.

### **Reasons for purchasing decision towards yogurt**

The surveyed consumers who were buyers of yogurt were asked about their reasons to purchase yogurt. The reasons are shown in Table 3. Most respondents stated that reason to purchase yogurt was to keep healthy (74.24%). This is in line with the research done by Jantawee (2008) who found that Thai consumers consumed yogurt to stay healthy. Nanawichit (2007) found that Thai consumers consumed pasteurized milk to keep healthy. Jonas and Beckmann (1998) clarified that health was mentioned as one reason for English consumers in choosing

**Table 1 Consumer behavior towards yogurt**

Consumers' behavior	Urban area (n = 300)		Sub-urban area (n = 100)		Grand total (n = 400)	
	Number of person	Percentage	Number of person	Percentage	Number of person	Percentage
<b>Type of consumer</b>						
Buyer	255	85.00	40	40.00	295	74.00
Non-buyer	45	15.00	60	60.00	105	26.00
<b>Frequency of consumption</b>						
At least once a week	124	48.63	17	42.50	141	47.80
Once in 2 weeks	36	14.12	15	37.50	51	17.29
Once a month	60	23.53	8	20.00	68	23.05
Once in more than 2 months	35	13.72	0	0.00	35	11.86
<b>Length of consumption</b>						
1-2 months	42	16.47	4	10.00	46	15.59
2.5-6 months	57	22.35	16	40.00	73	24.75
More than 6 months	156	61.18	20	50.00	176	59.66

Table 2 Consumers' sources of information towards yogurt

Sources of Information <sup>1</sup>	Urban area (n = 255)		Sub-urban area (n = 40)		Grand total (n = 295)	
	Number of answer	Percentage	Number of answer	Percentage	Number of answer	Percentage
Television/internet advertisement and news	181	70.98	29	72.50	237	80.34
Product description/label description	48	18.82	9	22.50	57	74.00
Family or relatives and friends	96	37.65	27	67.50	123	26.00
Scientific journals/articles/books/magazines	38	14.90	0	0.00	38	
Doctor/pharmacist/nutritionist suggestion	10	3.92	3	7.50	13	47.80
Mall testing/ mall promotion	3	1.18	0	0.00	3	17.29

Note: <sup>1</sup> The surveyed consumers could choose a maximum of two answers.

functional foods such as yogurt, cereal and butter. The same findings conducted by Messina *et al.* (2008) who informed that the most important constructs for older people in Northern European countries associated with functional yogurt were related to health benefits. Additionally, Johansen *et al.* (2011) reported that there were three most important motivators for choice of the calorie-reduced dairy products, namely fat content, healthiness and taste.

Other important reason was its good taste. About 52% of yogurt consumers mentioned that they liked the taste of yogurt. In several studies, the taste has been the most important factor affecting consumers' mind/consumers' perception (Urala and Lahteenmaki, 2003). Urala and Lahteenmaki (2003) also argued that the taste led to general well beings of yogurt. Furthermore, they informed that the taste was the most reason mentioned for choosing yogurt. Phumeeekun (2006), Varahakij (2006), Luangbamrung (2007) and Petchdakul (2009) found that Thai consumers purchased yogurt due to its delicious taste. In addition, Jaratanakorn (2009) found that Thai consumers highly agreed with delicious taste of yogurt.

Diet option was another reason why consumers purchased yogurt (23.39%). It was because of this that they consumed yogurt in order to have their ideal body weight. Varahakij (2006) found that most Thai consumers consumed yogurt to lose weight. Furthermore, yogurt provided nutritional values such as protein, calcium, phosphorus, potassium, zinc, and vitamins (Miller *et al.*, 2007).

**Table 3 Reasons for purchasing decision towards yogurt**

Reasons to purchase <sup>1</sup>	Urban area (n = 255)		Sub-urban area (n = 40)		Grand total (n = 295)	
	Number of answer	Percentage	Number of answer	Percentage	Number of answer	Percentage
To keep healthy	187	73.34	32	80.00	219	74.24
Good taste	135	52.94	17	42.50	152	51.53
For diet requirements	60	23.53	9	22.50	69	23.39
To slow aging process	17	6.67	4	10.00	21	7.12
For particular therapy	14	5.49	5	12.50	19	6.44
Doctor's recommendation	10	3.92	1	2.50	11	3.73

**Note:** <sup>1</sup> The surveyed consumers could choose a maximum of two answers.

### **Reasons for not purchasing decision towards yogurt**

The surveyed consumers who declared themselves as non-buyers of yogurt were asked about their reasons for not purchasing yogurt. The reasons are shown in Table 4. The main reason given by these non-buyers of yogurt was an uncommon/unfamiliar product. They have never heard about the yogurt before (53.33%). Jantawee (2008) found that most Thai consumers stated that yogurt was a famed product. Moreover, they stated that the price of the yogurt was relatively expensive (22.86%). For instance, if it was compared to fresh milk, a cup of yogurt (Rp. 6,000 or 0.62 USD) was equal to one liter of fresh milk. It showed that price of yogurt was almost 3-4 times higher than fresh milk. Therefore, 12.38 percent of the consumers mentioned that they preferred to drink milk more than yogurt.

### **Binary logistic regression model of consumers' purchasing decision towards yogurt**

The results revealed that statistically significant variables determining consumer's purchasing decision towards yogurt were age, sex, occupations such as private officials and housewives, income level (range of Rp.1,500,001- 2,000,000), and location (Table 5).

The estimated coefficient of age was negative implying that older consumers' probability to purchase yogurt declined. It could be stated that younger consumers decided to purchase yogurt more than their elderly consumers. This finding was consistent with previous studies conducted by Verbeke and Viaene (1998) who found that younger consumers with age less than 25 years old dominated the consumption of yogurt in two regions of Belgium and Poland. Menrad and Sparke (2006)



**Table 4 Reasons for not purchasing decision towards yogurt**

Reasons to refuse <sup>1</sup>	Urban area (n = 45)		Sub-urban area (n = 60)		Grand total	
	Number of answer	Percentage	Number of answer	Percentage	Number of answer	Percentage
This product not common or unfamiliar (Never heard yogurt before)	13	28.89	43	71.67	56	53.33
Too expensive	18	40.00	6	10.00	24	22.86
I prefer drink milk or fresh milk than yogurt	6	13.33	7	11.67	13	12.38
Bad taste (do not like the taste of yogurt)	7	15.56	4	6.67	11	10.48
Not effective	1	2.22	0	0.00	1	0.95

**Note:** <sup>1</sup> The surveyed consumers could choose several answers.

**Table 5 Binary logistic regression results of consumer' s purchasing decision towards yogurt**

Variable	Coefficient	Prob.	Z-stat
Constant	0.26	0.8177	0.23
AGE	-0.05*	0.0897	-1.69
GEN	1.17***	0.0000	4.13
MAR	0.05	0.8931	0.13
EDU	-0.01	0.8675	-0.17
OCC1	-0.25	0.6606	-0.44
OCC2	-0.78*	0.0576	-1.90
OCC3	-0.65	0.1730	-1.36
OCC4	-1.23*	0.0747	-1.78
INC1	0.59	0.1918	1.31
INC2	-0.003	0.9945	-0.006
INC3	0.96*	0.0970	1.66
INC4	0.61	0.1724	1.36
INC5	0.97	0.1250	1.53
LOC	2.02***	0.0000	6.33
McFadden R-squared (R <sup>2</sup> )	0.25		
S.E. of regression	0.38		
Log likelihood	-173.02		
Prediction accuracy (%)	81.25		

**Note:** \*\*\*p ≤ 0.01 and \* p ≤ 0.10

$$\text{McFadden } R^2 = 1 - \frac{\text{Log likelihood}}{\text{Restricted log likelihood}}$$

also stated that German younger consumers preferred probiotic yogurt or dairy drinks. Pengpreecha (2007) and Soongkitboon (2007) found that different ages of Thai consumers statistically and significantly affected consumption behaviors of yogurt. Luangbamrung (2007) found that different ages of Thai consumers statistically and significantly affected flavor selection behavior towards yogurt. Besides, Varahakij (2006) found that age correlated with consumption behaviors of yogurt.

The estimated coefficient of gender was positive and statistically significant implying that female respondents increased probability to purchase yogurt than male respondents due primarily to health concerns of their own and family members incurred in female's consciousness.

The estimated coefficients of occupations as private officials and housewives were negative and statistically significant indicating that respondents who had occupations as private officials and housewives decreased probability of their decisions to purchase yogurt. These findings were consistent with studies of Pengpreecha (2007) and Soongkitboon (2007) who found that different occupations of Thai consumers statistically and significantly affected consumption behaviors of yogurt. Moreover, Varahakij (2006) found that occupation correlated with consumption behaviors of yogurt.

The estimated coefficient of income level (Rp. 1,500,001-2,000,000) was negative indicating that consumers in this income bracket decreased probability of decision to purchase yogurt. This finding was consistent with studies of Pengpreecha (2007) and Soongkitboon (2007) who found that different income levels of Thai consumers statistically and significantly affected consumption behaviors of yogurt. Nanawichit (2007) found that different income levels of Thai consumers statistically and significantly

affected purchasing decision towards pasteurized milk. Varahakij (2006) found that income level correlated with consumption behaviors of yogurt.

The estimated coefficient of location was positive indicating that the urban respondents increased probability of decision to purchase yogurt more than the sub-urban respondents.

### **Conclusions and Recommendations**

Yogurt has gained its popularity and acceptance in Indonesian markets owing to its publicized health benefits. The research results summarize that most sampled consumers were young female students. They were buyers of yogurt who had consumed it for more than one year. They obtained information about yogurt from television/internet advertisement. The main reason was mainly to keep healthy, whereas the consumers who did not consume yogurt due to its uncommon product. Statistically significant variables determining consumer's purchasing decision towards yogurt were age, sex, occupations as private officials and housewives, income level (range of Rp.1,500,001- 2,000,000), and location.

The results of this research lead to some marketing strategies for yogurt products as follow:

1. Age, sex, income level (range of Rp.1,500,001- 2,000,000), and location of Malang consumers were significant variables determining consumer's purchasing decision towards yogurt. Therefore, yogurt producers should target their consumers at urban, female teenagers who are in moderate income bracket.

2. Keeping healthy, diet option, and good taste were reasons why Malang consumers purchased yogurt. Therefore, yogurt producers should

focus product development such as novel species of bacteria, taste, product safety, nutritional values and other additives to satisfy the consumers.

3. Price of yogurt was relatively expensive which was important obstacle for consumers. Therefore, yogurt producers should develop techniques to decrease production costs, marketing costs and revise their yogurt prices.

4. Most consumers in urban and sub-urban areas obtained information about yogurt through television/internet advertisement alongside with the consumers attitudes to keep healthy and maintain diet. Therefore, yogurt producers should give more attention about benefits of the yogurt using effective public mass medias such as television and internet as primary advertising channels. Newspapers, magazines, and brochure may be beneficial as secondary channels.

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