Analysis Various Factors that Influence the Purchasing Behavior of Goat Milk in Bogor Regency, Indonesia

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Abstract-- **This study were aimed to analyze the market segmentation of goat milk in the Bogor region, Indonesia and to analyze the consumer characteristics and factors which affecting consumer behavior in consuming goat milk in order to serve as the basic data in formulating the marketing strategies of goat's milk in Bogor Regency.**

The subjects of this study were agents, retailers and goat milk consumers. The data were collected through depth interviews used comprehensive questionnaires. One hundred fifty (150) goat milk consumers were taken in this study. The parameters of this study are goat milk consumption, consumer characteristics and some factors that influence the purchasing behavior of goat's milk. Data analysis was conducted on the analysis of consumer characteristics was performed by descriptive analysis and the factors that influence goat's milk purchase decision and goat's milk market segmentation was performed by Structural Equation Modeling (SEM) and cluster analysis.

Finding the result showed most of goat milk consumers decided bought goat milk because of health reason, productive consumer which age of 21 to 60 years on average relatively high educated and working as private employees, state employees and civil servants as well as derived from the Javanese and Sundanese. A Goat milk consumer in the area of Bogor was not dominated by Arabs and Chinese ethnic, but mainly from the Sundanese and Javanese. The result showed that consumers purchasing interest were directly affected by social and psychological factors of consumer, and were not influenced by personal factors and consumer subculture. Consumer factually purchasing was directly affected by personal factors (education level and occupation) and consumer purchase interest, indirectly affected by social and psychological factors, the purchasing behavior was not influenced by subculture factors of consumer. The image of goat's milk as a healthy drink could be done through the promotion of media products through advertising, distribution, and by improving customer service.

Index Term-- **Consumer behavior, goat milk, purchasing behavior, health.**

1. INTRODUCTION

Milk product including goat milk is high nutritious animal product, compared with cow milk goat milk has more benefited, such as high-mineral Selenium which is useful to improve the body protection system (Patrick, 1999) and consists of capric and caprilic acids as anti-microbe (Dosch et al, 1994). Goat milk does not cause allergy. It is assumed that goat milk consists of lower casein protein α si-CN and π-CN than cow milk, while protein β-CN is higher (Ceballos, 2008). Fat form of goat milk are smaller and soft, and also consists of more short and medium chained fat ($C6:0$, $C8:0$, $C10:0$, and $C12:0$)

compared with cow milk (Park et al, 2007). This fact is assumed because goat milk easier to absorb by human body, therefore, it does not cause allergy. Dairy goat milk rich polyunsaturated fatty acids could reduce the cardiovascular disease (Cattaneo et al., 2006)

Dairy goat business has many benefits, such as goat farmer may sell goat milk and goat breed with high price, but the business also experiences many problems, such as the younger farmers may experience difficulties in marketing goat milk and uncontainable selling volume of goat milk makes them difficult to determine their business scale and milk production yielded. It is occurred because goat farmer do not have the accurate data about goat milk customers, so that they do not have any view about potential market, market characteristic, and customer requirement, therefore goat milk consumer characteristic are needed for managing goat milk marketing strategy.

Knowledge regarding on customer characteristic, aspects of customer behavior influencing goat milk purchasing interest, and goat milk attributes desired by customers are required to understand the goat milk market. According to Schiffman and Kanuk (1991), customer's desire and requirement could be understood if an organization knows its customer behavior. Customer behavior is the behavior showed by customer for searching, purchasing, using, evaluating, and determining product and service which will satisfy them (Block and Williams, 2001).

The researcher attempts to make model of customer purchasing behavior ranging on factors assumed to affect the customer purchasing behavior. This model was adopted from major factors influencing the purchasing behavior according to Kotler and Amstrong (2001), namely cultural, social, individual, psychological factors. The four major customer characteristic factors will directly affect the purchasing decision process through the attitude reflected in purchasing interest and indirectly affect factual purchase by cunsumer. Mason and Hausler (2006) stated that customer purchasing behavior was affected by its requirement itself and as the effect of relationship with its environment. The purchasing decision depends on the personal emotional condition, social situation, purposes and values. Purchasing pattern is needed to understand what causes customer make factual purchase and merely interested.

According to Kotler (1990), a culture is "a factor determining one's basic desire and behavior." Learning customer behavior means that we learn human being's behavior, so customer behavior can be determined by culture reflected in the way of life, behavior and tradition in selecting various products at market. Culture consists of

IJENS

smaller sub-culture, which is a group of people who have the same value system based on the same experience and life situation. Sub-culture involves citizenship, religion, race group and geographic region (Kotler and Amstrong, 2001).

Social effect includes group, family effects and one's role effect in his environment (Kotler and Amstrong, 2001). Family consists of main family plus relatives such as grandfather, grandmother, uncle, aunty, and son/daughter-in-law. Family members can influence customer behavior. Family is the most important customer purchasing organization in the society.

According to Kotler and Amstrong (2001), a group which directly influences and belongs to an individual is called membership group. Some of them are primary groups, such as family, friends, neighbors, and associates. The others are formal secondary groups such as religious groups, professional association, and labor union. One's position in each group can be established by his role and status. Role involves the expected activities done by a person. Every role results status. People will choose products which will communicate their roles and status in their societies.

As a whole, the customer's decision is also affected by personal characteristics. They are age and stage of life cycle, occupation, economic condition, life style, personality, and the customer's own concept (Kotler and Amstrong, 2001). Purchasing interest has closed relationship with customer's factual purchase. The purchasing interest is the customer's trend to buy a brand or take an action related to purchasing measured by customers' potential level to make a purchasing (Assael, 2001). Rossiter and Percy (1996) stated that purchasing interest is the customer's own order to make any purchasing of a product, planning, taking relevant actions, such as suggesting (initiator), recommending (influencer), selecting, and finally taking any decision to purchase.

2. MATERIALS AND METHODS
2.1. Research Approach

This study was conducted on December 2010 up to the end of March 2011 or for four months. The study were done to identify factors assumed that influenced customers' purchasing behavior, namely culture, social, personal, and psychological factors and causality relation among them with purchasing interest and factual purchasing by customers.
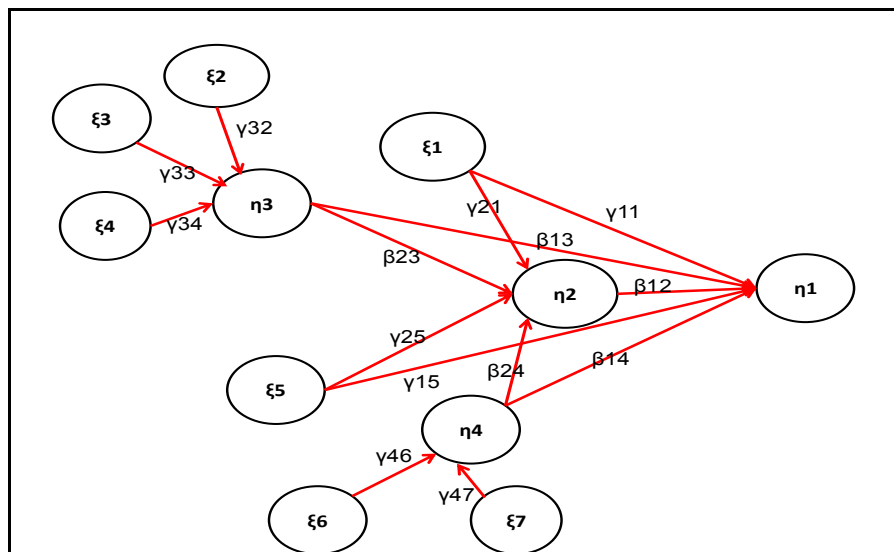
The model used in this study was shown in fig. 1.

Fig. 1. Framework of purchasing behavior model in the study

As shown in Illustration 1, the relationship between exogen and endogen (ηj) variables and exogen (ζi) variable together with its indicators. Each variable has causality relationship with the other variables. Based on the illustration above, there are four endogen variables and seven exogen variables, so that there are four formulas of channel analysis reflecting the structural model of this study:

$$\eta 1 = \beta 12.\eta 2 + \beta 13.\eta 3 + \beta 14.\eta 4 + \gamma 11.\xi 1 + \gamma 15.\xi 5 + \zeta 1 \dots\dots\dots\dots\dots \quad (1)$$

$$\eta 2 = \beta 23.\eta 3 + \beta 24.\eta 4 + \gamma 21.\xi 1 + \gamma 25.\xi 5 + \zeta 2 \dots\dots\dots\dots\dots\dots\dots \quad (2)$$

$$\eta 3 = \gamma 32.\xi 2 + \gamma 33.\xi 3 + \gamma 34.\xi 4 + \zeta 3 \dots\dots\dots\dots\dots\dots\dots\dots \quad (3)$$

$$\eta 4 = \gamma 46.\xi 6 + \gamma 47.\xi 7 + \zeta 4 \dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (4)$$

Description : $\eta 1$ = factual purchasing, $\eta 2$ = purchasing interest, $\eta 3$ = social factor, $\eta 4$ = psychological factor, $\xi 1$ = cultural factor, $\xi 2$ = role, $\xi 3$ = family, $\xi 4$ = group, $\xi 5$ = personal factor, $\xi 6$ = motivation, $\xi 7$ = perception, βji = predictor channel coeficient of endogen vector, γji = predictor channel coeficient of exogen vector, ζj = residual value of endogen variable.

The indicators and construction (latent variable) in the studied model were described below:

1. Sub-culture factor as the part of culture in which here has two reflective indicators, namely religion and race or ethnic.
2. Social factor which consists of three latent variables, namely the role influence in a family, family influence, and guidance group influence. Family influence variable has five reflective indicators, namely: children, wife, husband, relatives, and parents' influences; whereas, guidance group influence has four reflective indicators, namely friends, superior, neighbors, and traders influences.
3. Personal factor which has five reflective indicators, namely age, gender, education level, income, and occupation (Kotler, 2005).
4. Psychological factor in which here has two latent variables, they are perception and customer motivation, in which the customer perception variable has four reflective indicators, namely: perceptions of taste, merit, nutrition, and stamina supplement. Whereas, motivation variable has five reflective indicators, namely motivation which meet biological, health, security, acceptance, and social status or prestige needs.
5. Purchasing interest aspect which has one reflective indicator, that is purchasing interest measured with customer trend level to purchase.
6. Factual purchasing aspect measured with reflective indicator consists of purchasing frequency, purchasing quantity, and actual purchasing value.

2.2. Research Method

The research method was survey method, while the data collecting used interview and questionnaire approaches. The observed variables consisted of customer characteristics, factors which affected purchasing interest, and factors influenced goat milk purchasing decision.

2.3. Sample Method

One hundred fifty (150) goat milk consumers were taken from Residences which live in Bogor Regency and milk agent or outlets that sell goat milk in Bogor as sample. The estimation of total goat milk customer can be accounted based on the average milk production volume or selling during a month derived by the average a consumer's purchasing volume during the last month in every outlet. It was because there was no data of total milk customer in every outlet. The number of minimum sample according to Arikunto (2006) was determined as 20-25% population so the number of sample of goat milk consumer in agreement with Arikunto (2006).

2.4. Data Analysis

Data obtained, furthermore, were managed as analysis requirement. The customer characteristic data was managed and explained with descriptive statistic Whereas, the hypothesis test were proved use inferential statistic approach. The analysis used was Structural Equation Modelling (SEM) analysis with Partial Least Square (PLS) method (Ghozali, 2008).

PLS evaluation model was based on prediction measurement which had non-parametric characteristic. Structural model on hypothesis test was evaluated by considering the parametric coefficient value and t-statistic value and significant parametric coefficient. T-statistic value was obtained from bootstrapping result by dividing parametric coefficient value with its error standard value.

Meanwhile, the rejection and acceptance hypothesis were:
1. Ho was accepted and Ha was rejected if t < t table.
2. Ho was rejected and Ha was accepted if t ≥ t table.

3. RESULTS AND DISCUSSION

3.1. Customer Behavior

Result of the study showed that 52.2% customers did not regularly buy goat milk, while 47.8% of them regularly consumed goat milk. The quantity was almost similar. Through an interview it was known that the reasons of customers who did not regularly consume goat milk were because they have just tried and wanted to know the reaction and its effect. As well, few of them consumed it for a long time, but they were in a small quantity and undefined purchasing time. The reasons of customers who regularly consumed goat milk were because they or their families found out the advantage of goat milk.

The main purposes of customers to consume goat milk are various, namely maintaining health or enhancing body protection, healing from disease maintaining stamina, supporting appetite for food and improving digestion, sleeping well, neutralizing chemical substance, and making skin smooth. Generally, the reasons to consume it are to maintain health, maintain stamina, and heal various diseases.

3.2. Testing Structural Model with PLS

Analyzing data *Structural Equation Modeling* (SEM) with PLS resulted three set of relationship, namely: firstly, *outer loading* which specifies relationship between latent variable and manifest indicator or variable (measurement model); secondly, *weight relation* is estimation value of manifest variables (indicators) which build latent variables, in the model are *outer weight* value or regression coefficient; the last is inner model or *inner weight* is estimation value or relationship regression coefficient among latent variables. Counting by using PLS program resulted complete model as follows:
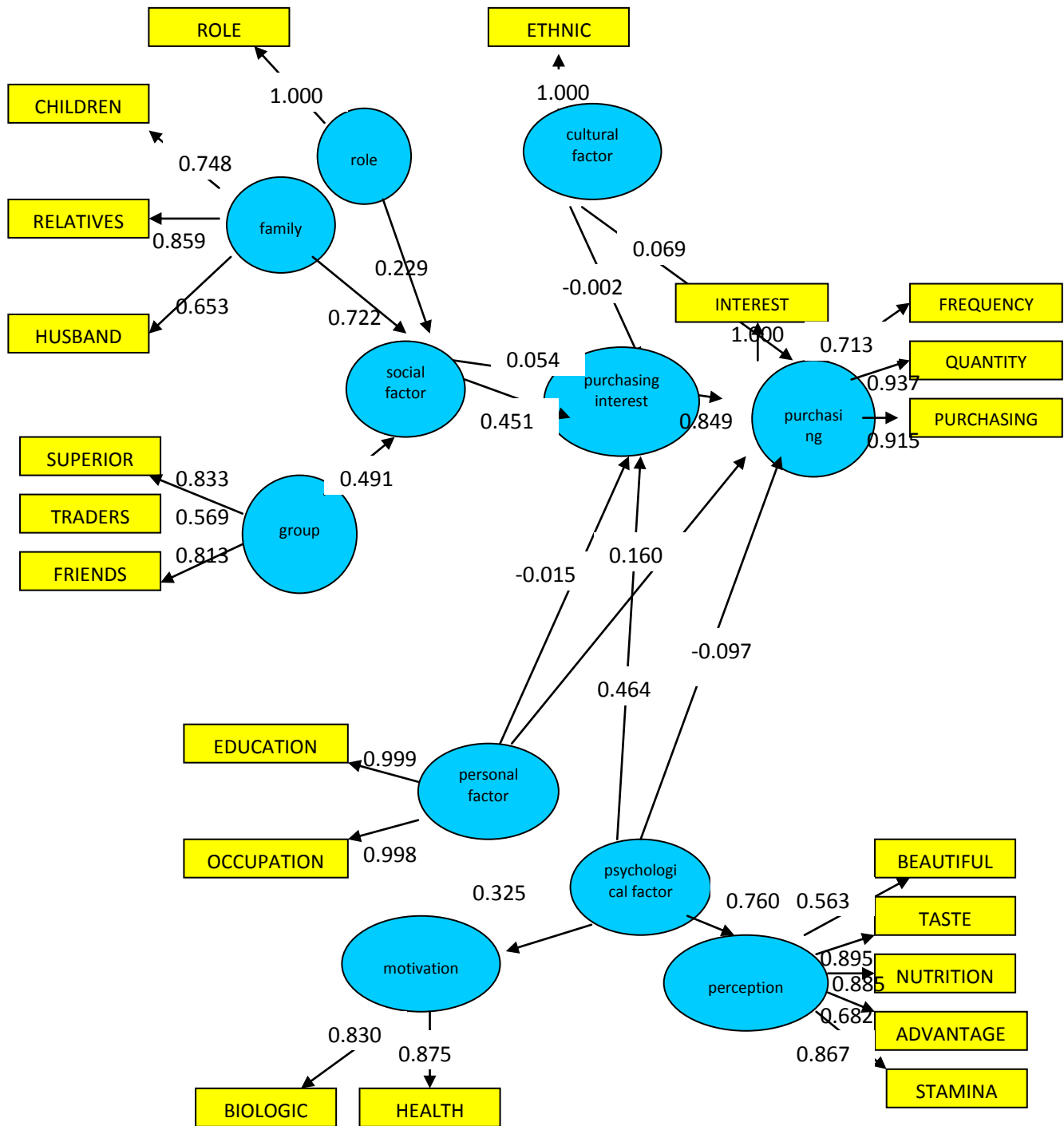
Fig. 2. Relationship between Indicator and Construct (*Outer Loading*)

There were two kinds of correlation test between latent (construction) variables and its indicators, namely validity test consisting of *convergent validity* and AVE, and also reliability test with *Composite reliability* (pc).

By viewing *loading factor* or correlation coefficient between latent variable (circle) and its indicators (square) in Illustration 2, it seems that all indicators are valid and able to use in the study because they have *outer loading* value > 0.5. Furthermore, from the statistic test result can be known that all indicators building significant latent variable with counting value t > t table.

AVE value of role was 1.000, family was 0.574, group was 0.560, social factor was 1.000, motivation was 0.727, perception was 0.584, psychological factor was 1.000, cultural factor was 1.000, personal factor was 0.997, purchasing interest was 1.000, and factual purchasing was 0.74. Test result showed AVE value of all variables > 0.5, the model could be assumed to have good *discriminant validity* value.

Result of the study showed *Composite Reliability* value of role was 1.000, family was 0.800, group was 0.788, social factor was 1.000, motivation was 0.842, perception was 0.844, psychological factor was 1.000, cultural factor was 1.000, personal factor was 0.999, purchasing interest was 1.000, and factual purchasing was 0.894 .From the test result, it was obtained pc value of all variables > 0.6, the model has high consistency internal and can be used in the study.

As shown in Table 1. Testing structural model was constructed by viewing R-square value which is *goodness-fit model* test. From the calculation, it is known that determination coefficient value as follows:

TABLE I
DETERMINATION COEFICIENT VALUE (R-SQUARE)

Variable	R-square
Role	
Family	
Group	
Social factor	0.987
Motivation	
Perception	
Psychological factor	0.977
Cultural factor	
Personal factor	
Purchasing interest	0.478
Factual purchasing	0.758

From the result of the study, it is obtained R-Square from role, family and group influences to social factor 0.987 or 98.7% (0.987 x 100%), it means that changing variation of social factor can be explained by role, family and group about 98.8%, while the remainder will be 1.2% (100% - 98.8%) described by other variables outside the study. The study result of influence to psychological factor is 0.977 or 97.7% it means that changing variation of psychological factor can be described by motivation and perception for 97.7%, while the remainder will be 2.3% described by other variables outside the study.

The study result showed factors influenced to purchasing interest factor was 0.478. It showed that the changing variation of purchasing interest can be explained by cultural factor, social factor, personal factor, and psychological factor for 47.8%, while the rest for 52.2% explained by other variables outside the study. The R-square value 47.8% to endogen latent variable indicates that the model constructed with structural model evaluation criteria with PLS (Ghozali, 2008).

The study result showed the influence to factual purchasing is 0.758, therefore, the changing variation of factual purchasing could be described by purchasing interest, personal factor, cultural factor, social and psychological for 75.8%, while the rest for 24.8% explained by other variable outside the study. The R-square value for 75.2% to endogen latent variable indicates that model constructed with structural model evaluation criteria with PLS (Ghozali, 2008).

Correlation test among variables by seeing parameter coefficient value and significant value t-stat was shown in Table 2.

TABLE II
RESULTS FOR INNER WEIGHTS TABLE

	Original sample estimate	Mean of subsamples	Standard deviation	T-statistic
Purchasing interest -> factual purchasing	0.565	0.564	0.110	5.149
Sub-culture -> purchasing interest	0.035	0.033	0.118	0.296
Sub-culture -> factual purchasing	0.040	0.036	0.074	0.540
Group -> social factor	0.578	0.542	0.086	6.709
Family -> social factor	0.565	0.564	0.110	5.149
Role -> social factor	0.309	0.295	0.058	5.315
Social factor -> purchasing interest	0.377	0.359	0.108	3.499
Social factor -> factual purchasing	0.060	0.078	0.116	0.519
Personal factor -> purchasing interest	0.024	0.038	0.128	0.191
Personal factor -> factual purchasing	0.159	0.151	0.078	2.029
Motivation -> psychological factor	0.467	0.468	0.058	5.315
Perception -> psychological factor	0.625	0.615	0.065	9.671
Psychological factor -> purchasing interest	0.420	0.440	0.106	3.942
Psychological factor -> factual purchasing	-0.089	-0.073	0.078	1.144

Figure of this correlation testing result among variables or study hypothesis was presented below:
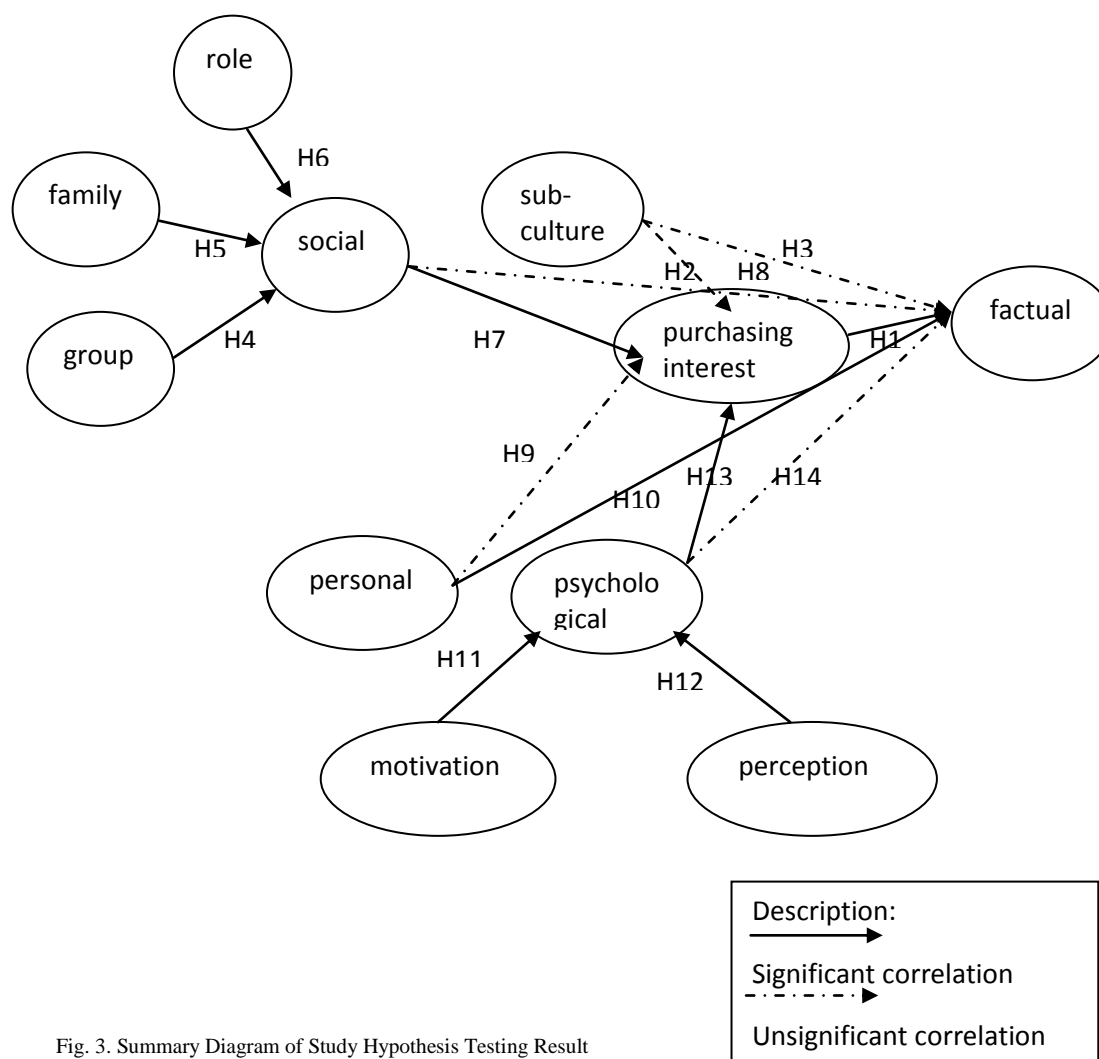
Fig. 3. Summary Diagram of Study Hypothesis Testing Result

The hypothesis tested showed that customer's purchasing interest were directly influenced by customer's social and psychological factors. The effect of customer's social factor to purchasing interest were built from group, family, and customer role influences, while psychological factor influence to purchasing interest were built by customer's motivation and perception influences. Customer's motivation of health needs and customer's perception of goat milk as healthy drink were the major factors in influencing customer's purchasing interest.

The analysis result shows that customer's factual purchasing was directly influenced by customer's purchasing interest and personal. The customer's factual purchasing is also indirectly influenced by social factor and customer's psychological factor by variables among purchasing interest.

Meanwhile, the sub-cultural factor insignificantly affects customer's purchasing interest and factual purchasing. The result supported by the fact consumer stay same demographic area, not in the area which has different ethnic and religion, so the customers' characteristics were relatively the same. Furthermore, the main motive they consumed goat milk are for healthy purpose, not because the tradition in their families, although they came from Arabian and Chinese ethnic.

From the hypothesis testing result above, it can be drawn a conclusion that the customer's purchasing interest is not influenced by customer's personal factor as financial condition, education and their occupation, but in realization of goat milk purchasing, they are influenced by customer's interest to goat milk and the consideration of their personal condition such as occupation and their education.

The analysis result of hypothesis test showed that partially there was no real effect to social, sub-cultural, and psychological factors to customer factual purchasing, but by looking the determination coefficient psychological factor (R^2) for 0.759, the goat milk factual purchasing can be simultaneously explained as 75.9% by social, sub-cultural, psychological, personal factors together with customer's purchasing interest.

Cluster analysis of goat milk respondents were divided into four groups. From the four group segmentation, the group one and three have bigger percentage than group two and four. Group one was the customer group with percentage 31.3% with the age ranged about 21-40 years old, most of them study in senior high school and work as private company's employees. They have total income IDR 2-4 million per month and came from Sundanese ethnic.

Group 3 is customer group with percentage 28.4% with the age ranged 41-60 years old, educated as undergraduate to post-graduate and work as Civil Employees and most of them came from Sundanese ethnic. Group 4 they usually received income less than IDR 1 million per month and received 3-4 million, and most of them were Sundanese ethnic.

TABLE III
CLUSTER ANALYSIS ABOUT RESPONDENTS

No	Group	1	2	3	4
	%	31.3%	22.4%	28.4%	17.9%
1	Age	21-40 years old	41-60 years old	41-60 years old	41-60 years old
2	Education	Senior high school	Under graduate	Under-graduate and Post-graduate	Elementary up to Junior high school
3	Occupation	Private employee	National employee	Civil Employee	Private employee
4	Income	2 – 4 million	> 5 million	> 5 million	< 1 million and 3 – 4 million
5	Ethnic	Sundanese	Javenese	Sundanese	Sundanese

By viewing table of *cluster* analysis above and SEM analysis result, customer of goat milk in Bogor regions are not dominated by Arabian generations, but most of them are Sundanese and Javanese ethnic, so that goat milk market segmentation based on cultural factor was not relevant. Some respondents have perception that goat milk was healthy drink and consisting of good nutrition for body. It will be constructed goat milk market segmentation with productive age ranged from 21-60 years old, relative high education, and work as private employees, national employees, and civil employees, most of them came from Javanese and Sundanese ethnics. The age of 21-60 years old is productive age. In this age stage, most respondents are active workers, so they need to maintain their health, in the age 40 years old, most customers are financially settled while their physics are physiologically weaker, but because they tend to be healthier and feeling younger they take care of their body condition.

The consumer consume supplement to maintain their bodies health. According to Kotler and Keller (2006), group of age 40 years old will be bigger than group of age 18-40 years old and control national wealth. They try find sources to keep younger by being members of health club, having gymnastic instruments, using cream for skin strengthen, consuming nutritious supplement and organic food. According to Stanton (1991), market for adults (20-39 years old) has significant value because in these ages people are starting to build their career and household, they will spend much money to shopping, while market for older or matured ages (ranged from 50-60 years old) was bigger and

richer because the members are in their peak income and usually they do not finance their children anymore. This segment is the marketer's target, especially for qualified and high priced service and product.

4.   CONCLUSIONS

Based on the result of the study, it can be concluded that customer's purchasing interest to goat milk is influenced by customer's social and psychological factors, and is not influenced by their personal and sub-cultural factors. It can be proved that there are influences of role in family, family, and guidance group to customer's social factor, and also influences of customer's motivation and perception to customer's psychological factor.

Customer's factual purchasing is directly influenced by personal factor (education and occupation levels) and customer's purchasing interest, and is not directly influenced by cultural, social, and psychological factors. Market segmentation of goat milk customer derived from the expected product benefit is customers who cares of their health of productive ages 21-60 years old, relative high educated, and work as private, national, and civil employees and also derived from Javanese and Sundanese ethnics. The customers of goat milk in Bogor region are not dominated by Arabian and Chinese generations, but Javanese and Sundanese ones. Therefore, the market segmentation of goat milk based on the culture was not relevant.

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