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Satisfaction measurement on agribusiness product marketing

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ABSTRACT

The present study is aimed at implementation of satisfaction measurement technique to develop a qualitative and marketable new product as an alternative method to develop agribusiness product marketing. The present research work is an applied study related to the development of a new product namely turmeric-tamarind syrup and ettawa goat milk-sweet purple potato ice cream. The ingredients are used for medical purpose but still available as minor or less important commodities in market except tamarind that is used to produce various commodities such as candy. The research is carried out on 2011 in collaboration with Jomint Company and Kampung Kearifan Indonesia (KKI) Company. Jomint and KKI are business partners which are engaged in agribusiness. Jomint settles in Yogyakarta Special Regency and KKI in Jakarta City. Research on ice cream is carried in two steps, first step is involved in studying various aspects of production and development of product at KUBE Adi Jaya (Jomint's Partnership) and measurement of potential customer's satisfaction is on the other. Research on turmeric-tamarind syrup in corporation with KKI is conducted in one step, that is, satisfaction measurement without consideration of production stage. Agribusiness system chain is ended in marketing system which is associated with the objectives of making profit through fulfillment of consumer's needs and wants. Satisfaction is one of key that influences in product marketing. Satisfaction measurement is the most important factor that influences product marketing. This satisfaction measurement technique is developed from Kotler and Keller's concept that define satisfaction (S) is a function of expectation (E) and fact of product/product performance (P), i.e., S = f (E,P). S includes attributive factors of products such as appearance, taste and packaging. Assuming that Sav = P/E where, Sav denotes average of sum S (aggregate). S (individual) and Sav (aggregate) indicates high potential if value 1, moderate if value is 0.8<S<1 and low when value is 0.8. The research is conducted by taking data from 50 respondents. For measuring satisfaction distribution, Gini ratio is applied to know whether the satisfaction is equally distributed or any dominance in specific cluster. The results show that satisfaction level on ice cream is high (1.038 > 1). The biggest satisfaction value per element of product attributes is realized from the contents (1.24 >1); smallest is related to packaging (0.974) and the values of other parameters such as appearance and taste are 0.997 and 0.983 respectively. Gini coefficient is 0.013 or very close to 0, so the value of satisfaction is very well distributed or almost equal for each cluster. Based on the results, it may be inferred that ice cream of ettawa goat milk sweet purple potato is a quality product. Satisfaction level on turmeric-tamarind syrup is high (1.064 > 1). The biggest satisfaction value per element of product attributes is obtained from the contents (1.21 >1); smallest is related to packaging (0.937); others are appearance (1.019) and taste (1.118). Gini coefficient is 0.014 or very close to 0, so the value of satisfaction is very well distributed or almost equal for each cluster. Based on the results, turmeric-tamarind syrup is also a quality product.

Key words: Gini coefficient, product performance, satisfaction, sweet purple potato, tamarind, turmeric

Development of quality products from agricultural commodities is one of primary strategy in agribusiness sector. Agribusiness encompasses a series of processes most of which are interdependent and some are complementary to each others.

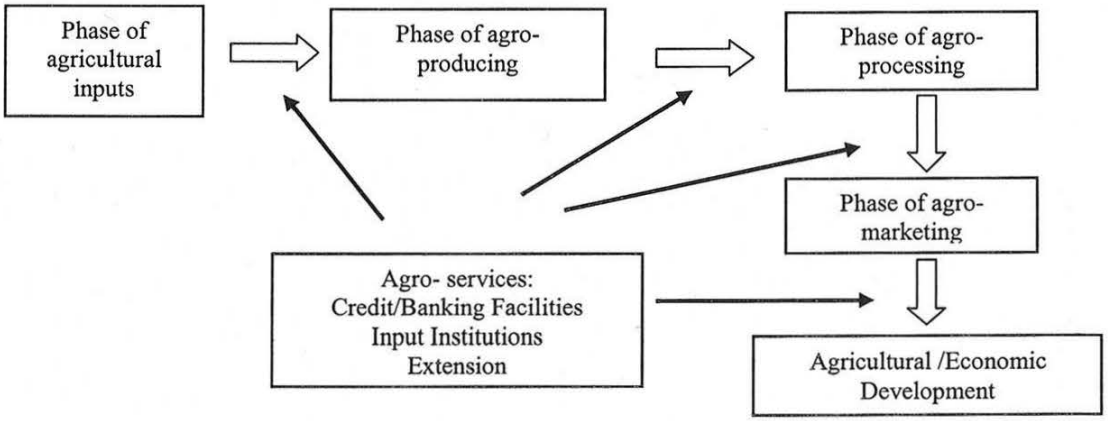

Fig.1: Path of agribusiness system – agricultural development[1]

[1] It is developed from Cohen, J. M and Norman. T. Uphoff's concept. 1977. *Rural Development Participation: Concepts and measures for project design, implementation and evaluation.* Rural Development Committee of Cornell University, New York. pp.189-200.

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Agribusiness system is an integrated process aimed at development of agriculture in a sustainable manner. End of agribusiness system chain is marketing system directed towards making profit through fulfilling of consumer's needs and wants. That concept sustains marketing concept by Stanton (1989) who asserts that marketing is a serial process to gain the aim through fulfilling consumer's needs and wants. Moreover, Steinhoff and Burgess (1986) assert that marketing planning must include all the ingredients necessary to satisfy customers, including producing the products they want, picking the proper location, determining the correct promotion and advertising plans, and many other factors that lead to customer satisfaction.

Core of the concept is supposed to be integrated element in food diversification, development of small-middle business (SMB) and entrepreneurship based agribusiness. Processing a commodity being creation a product in this case through unit of SMB, often entraps selling concept which is oriented to volume of sell instead of fulfilling consumer's satisfaction (marketing orientation). This condition is the way which makes business a creative industrial sector is not sustainable.

Product diversification is oriented to expand agri-business with main target of earning profit. Business strategy must be developed based on present condition even for an establish company and forecasting of future demand is to be made through analysis of time series data. The strategy encompasses elements based on Kotler' s concept (2000) that includes product, price, place, promotion, people, process, and physical evidence popularly known as 7 P' s of marketing mix. The first four elements are called classic concept while the others are known as evidence of service.

This paper is an exercise of applied research in the field of development of a qualitative and marketable food product which is ultimately aimed to support development in agribusiness sector. Here the assumption is that a product is oriented to the market with the intention of serving the consumers and at the same time, to accomplish satisfaction. Satisfaction on food product is an integration of serial attributive factors of product such as taste, appearance and other important factor is the nutritional contents inside the product and outside of product is packaging.

Satisfaction (S) based on Kotler and Keller (1994) is a person's feeling of pleasure or disappointment resulting from comparing a product's perceived performance (outcome) in relation to his or her expectations. If the performance falls, short expectations, the customer is dissatisfied. If the performance matches the expectations, the customer is satisfied. If the performance exceeds expectations, the customer is highly satisfied or delighted. Based on the concepts, satisfaction can be concluded as a function of expectation (E) and product performance (P). Kotler asserts that consumer's satisfaction is the level of someone's feeling after comparing performance with his/her expectation. Developed assumption is if $P < E$ or fact (product performance) unsuitable to the expectation, it means that consumer's satisfaction is not yet achieved or has not achieved high level of satisfaction.

In this context, present research is related to the innovation of a product which will support the sustainability of product diversification oriented to business. This research aimed to implement satisfaction measurement method to develop a qualified and marketable new product as an alternative method to develop agribusiness product marketing. This applied research was focused on turmeric-tamarind syrup and ettawa goat milk-sweet purple potato ice cream product. Both are made from commodities useful to human health. On the other hand, the applied research is intended to get rid image that the materials are medicinal products and to establish as an ingredient to produce a delicious and enjoyable product useful to human health and is capable to accomplish consumer's satisfaction. Involving satisfaction measurement technique, in innovating or creating a product, it shall strengthen the product advantages based on product facet of marketing mix.

MATERIALS AND METHODS

Methods used in the present study same for both product i.e. turmeric-tamarind syrup and ettawa goat milk-sweet purple potato ice cream the only difference is that the turmeric tamarind syrup does not pass production process as that of ettawa goat milk-sweet purple potato ice cream. A total of 100 respondents, 50 from each product, constitute the sample size. Applied research tracks of both products are presented below.

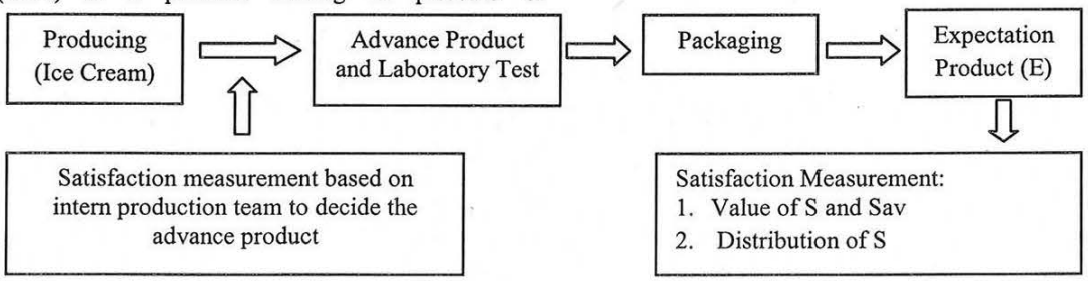

Fig. 2: Track of applied research on ettawa goat milk-sweet purple potato ice cream

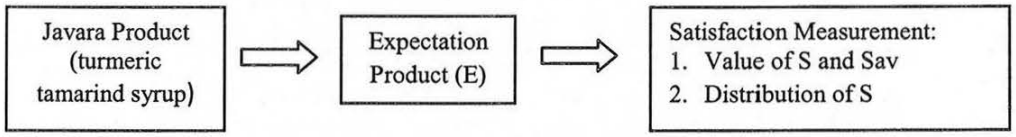

Fig. 3: Track of applied research on turmeric tamarind syrup

Production process furnished in box 2 is taken from KUBE (a corporative business association), Adi Jaya, Sleman District, Yogyakarta Province. Laboratory test has been done to know nutritional contents of product. Fifty respondents on product turmeric tamarind syrup that is produced by PT. KKI are women who have been passing menstruation phase, on the other hand ice cream products doesn't has any relation to sex and age. Out of total 50 respondents consuming ice cream products, 25 persons are children and teens (7–18 years old) and rest 25 are beyond 18 years.

Measurement process of satisfaction includes S *i.e.* personal satisfaction and Sav which is average satisfaction derived from aggregate. Measurement of S on products is done based on 4 indicators that is, *taste*, *appearance*, *contents* (nutritional content) and packaging. The method applied in the study is as follow:

$S = P/E$ I

Here, S denotes satisfaction; E indicates expectation from products and P measures product performance.

The formula presented above is a new approach which is modified or developed from Kotler's concept *i.e.* $S = f(E, P)$. Simplified form of equation I shows a more clear relationship (ratio) between expectation product (E) and product performance/fact of product (P) signifying how product performance directly competes with expectation product. If S or Sav is greater than equal to 1, the product has high level of satisfaction; moderate if the value lies between 0.8 and 1, and low if it is lower than 0.8. Product turmeric tamarind syrup using Kiranti (a famous and establish product in Indonesia that is used to soothe menstruation) as the competitor (E), while ettawa goat milk-sweet purple potato ice cream is contesting with Walls ice cream (kind of Peddle Pop) made by Unilever Company.

Measurement on distribution of S value is done using Gini ratio. Product may have S value greater than 1, but probably not well distributed or belongs to specific cluster of respondents. Gini ratio (Gr) is a modified model derived from Lorenz curve as follows:

$$Gr = 1 - \sum_{i=1}^{k} PixTky \quad \text{.....II}$$

$$Tky = Pkyi + Pkyi - 1 \quad \text{.....III}$$

Where,

K = Number of class/cluster, in this research using 5 classes

P_i = % or frequency of object proportion in each class

$P_k y_i$ = % or cumulative proportion (*satisfaction*) until class number of i

$P_k y_{i-1}$ = % or cumulative proportion (*satisfaction*) until class number of i-1

Range of Gr value is 0 – 1. Distribution criteria which are used are:

1. equal if Gr = 0 – 0.24
2. equal – moderate if Gr = 0.25 – 0.50
3. equal – low if Gr = 0.51 – 0.75
4. unequal if Gr = 0.76 – 1 (Hanafiah, 2010)

RESULTS AND DISCUSSION

After passing through serial production processes and satisfaction measurement at beginning phase, one advance ice cream product is produced. It's further tested at laboratory to know nutritional contents and others indicators. A nutritious product, by all means, will give satisfaction regarding contents through providing nutritional needs which will make the consumer healthy. Related to turmeric tamarind syrup, research is undertaken by means of a ready product made by KKI Company to know the product advantages through product facet.

Turmeric tamarind syrup is made from assorted natural and organic ingredients in order to maintain the quality and long term effects. Ingredients that are used consist of turmeric, tamarind, nutmeg, etc. Turmeric-tamarind product is taken to soothe pain caused by menstruation, as well as to improve human metabolism system as an effect of curcumin and other contents. Organic matters are used to increase the product quality.

On the other hand, ice cream products pass through integrated applied research including production process, laboratory test and packaging process. Production process and laboratory test reports are displayed inside product as comprehensive, and packaging related information are outside of product. The laboratory test results for ettawa goat milk-sweet purple potato ice cream is displayed in table-1.

Table 1: Laboratory test results on ettawa goat milk-sweet purple potato ice cream

Content	1st Test	2nd Test	Average
Water (%)	67.08	67.02	67.05
Carbon (%)	0.78	0.77	0.78
Protein (%)	1.95	1.95	1.95
Lipid (%)	2.73	3.00	2.74
Crude Fiber (%)	0.46	0.46	0.46
Carbohydrate (%)	27.47	27.51	27.49
Calory (cal100^{-1}g)	140.65	137.79	139.22
Vitamin C (mg 100^{-1}g)	27.66	28.21	27.94
Total of Carotene (ug 100^{-1}g)	3.86	3.73	3.80
Antioxidant (%)	54.65	53.49	54.07
Total of Anthocyanine (mg 100^{-1}g)	3.37	3.73	3.56

Source: Analysis results from Laboratory of Food Technology and Agricultural Commodities, Faculty of Agricultural Engineering, Gadjah Mada University, 2011.

Laboratory test results show that ettawa goat milk-sweet purple potato ice cream include complete nutrition contents. By all means, the contents are useful to human health. Protein is useful to cell growth and brain development. Vitamin C is useful for body immunity and fiber is very important to digestive system. Product contents carotene, antioxidant and antocyanine that are useful to hold free radical which is supposed to prevent cancer and cell degeneration. Based on product contents facet, ice cream product can be said "dares" to compete with an establish ice cream product.

Measures of S value in terms of Sav (average of S) as aggregate are presented in table-2. It reveals that the highest value of Sav on ice cream product is achieved on contents element (1.24), followed by appearance (0.997), taste (0.983), and packaging (0.974). Satisfaction level of respondents to contents of ice cream product is high, while three others are moderately-high. Sav value on ice cream is 1.038; it means that the product satisfies the respondent's expectation. So the product is capable to compete with Walls ice cream. The product is also conforms the element of marketing mix (7P). Gini coefficient is estimated to be 0.0132 and its distribution ranges between 0 – 0.24. Hence, the level of consumer's satisfaction to ettawa goat milk-sweet purple potato ice cream well distributed as that of its competitor. So based on the results of Sav and Gini coefficient, it can be inferred that the product is capable to satisfy the respondents need equally.

Table 2: Composition of S and Sav value per product attribute

Attribute	Turmeric -tamarind syrup		Ettawa goat milk-sweet purple potato ice cream	
	Interval of S value	Sav	Interval of S value	Sav
Taste	1.00 - 1.21	1.12	0.93 – 1.00	0.98
Appearance	1.00 - 1.14	1.02	0.89 - 1.07	1.00
Contents	1.07 - 1.33	1.21	1.07 - 1.50	1.24
Packaging	0.82 – 1.00	0.94	0.89 – 1.00	0.97

Source: Primary data analysis, 2011

In case of turmeric tamarind syrup, the highest of Sav value is achieved on contents element (1.21), followed by taste (1.118), appearance (1.019), and packaging (0.937). Satisfaction level of respondents to contents, taste and appearance are found to high while for packaging, it is moderately high. Sav value is estimated to be 1.064 indicating the product high level of satisfaction is capable to satisfy the respondents. It means that turmeric tamarind syrup is capable to compete with Kiranti product. Yet, another advantage of the product is its conformity with the element of marketing mix (7P). Gini coefficient is 0.014 and distribution ranges from 0 – 0.24 i.e. level of consumer's satisfaction from turmeric tamarind syrup and Kiranti product as competitor is equal and well distributed. Both results of Sav as aggregate and Gini coefficient shows that the product is capable to satisfy the respondents equally.

Distribution of Sav values per attribute is important to frame marketing strategy for promotion. As for example, turmeric tamarind syrup possesses some attributes which are stronger than Kiranti, the

competitor in regard to the contents and taste that can be a "weapon" to fight against competitor.

Product conforming marketing mix is not a guarantee towards acceptability to the market and customers. For example, ettawa goat milk-sweet purple potato ice cream with higher Sav value than Walls ice cream, yet Walls is in much better position in product marketing. It signifies the importance of setting proper strategies related to product promotion, price policy, developing of market networking (place), etc. That fact is very important for a new competitor or innovator, production of a qualitative and marketable product is a primary criteria but not as sufficient to compete with other established products.

Partial definition of product will destroy the product its self. Product is not only something inside the cup or wrapper but much wider, that is, anything inside and outside. Inside factors encompass contents, taste, appearance, and even including the preservatives used to prolong expiry. Outside factors encompass packaging, imaging advertisement, etc. Relating to a new product, product image doesn't need to be displayed as it is not yet released to the market. Apart from the measurement, creation of product image through promotion and advertisement must be done continuously.

Marketing mix concept developed by Kotler is a serial marketing facet which is to be followed consistently to meet consumer satisfaction. This simple formula can be applied for a new product developed following satisfaction concept as formulated Kotler as an alternative method to measure satisfaction. The formula clearly establishes the direct relationship between P and E, which is described by Kotler. If P satisfies E (consumer's expectation), then it is satisfaction. If E is placed as our competitor, the product performance will satisfy the consumer *i.e.*, P/E is 1. Before using an outside product as competitor (leader product), E must be derived from product itself the comparison of which will yield advance product.

The result of the research work on conducted on both ice cream and syrup reveals that they are capable to accomplish respondent's satisfactions taking Walls ice cream and Kiranti as an expectation product where both are established product in marketing. It also indicates that the higher satisfaction is influenced by respondent's positive response to nutritional contents. This fact shows that respondent's awareness regarding the important points of nutritional contents and healthy food are considered as essential criteria based on which a product is to be labeled as quality product.

Thus from the study it can be concluded that turmeric- tamarind syrup branded Javara and ettawa goat milk-sweet purple potato ice cream can be accepted as a qualified (inside and outside) and marketable product although just based on product facet of marketing mix. Measurement level and equal distribution of satisfaction using formulae mentioned above can be an alternative method to achieve a diversified advance product under existing frame of agribusiness.

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