



Product Origin Labelling and Consumer Willingness to Pay

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Abstract

Indonesia is the sixth largest mango-producing country with a production that totals to 3.5% of the world's current mango production, indicating that its mango production has a huge commercial prospect in the future. The main problem in marketing gedong gincu mango is the lack of quality guarantee that causes consumers to be reluctantly to pay premium prices. If consumers knew exactly where the mangos come from and could be sure of its quality, they would be willing to pay the higher price. This requires an original label brand, and would encourage consumers to pay premium prices and enable farmers to make greater profits. The survey was aimed to find out how consumer response if origin labeling exist in Mango Gedong Gincu, how consumers change in buying behavior from impor fruit to mango that has origin labeling, what domonant factors of cluster consumers believing that origin labeling assures them of good and safety product, which groups of consumers were paying higher than market price and what consumers thought about profit and loss with regard to labeling. The research was conducted from June to September 2013 and data will be analyzed by discriminant analysis. This research find out that 60 % consumers response is quality and 74 % is save for consumption if Origin Label exist in mango; the consumption change from Import fruit to local fruit in variour income, dominant of cluster consumers believing that origin label assure them of quality and food safety are income and education, WTP Consumer more than 40 % are Consumer age > 44 years

Keywords: Product development, discriminant analysis, origin region labelling, willingness to pay.

Introduction

Total contribution of mango to gross domestic product is approximately 35,449.46 billion rupiahs (48.36%). However, over the past twenty years, it has been on the decline. On the other hand, the demand for fruit in Indonesia has been increasing for the past five years, which is 10%¹. This happens because most Indonesian people are aware of healthy life style in that they consume healthy food such as fruit and vegetables. Although Indonesia is a major mango-producing country in Asia, mango import continues to increase. The data show that in 2000 mango export reached 64 tons, and in 2010 it reached 1,129 tons showing an increase of 200% (BPS, 2009). The irony of it is that Indonesia has vast land suitable for mango cultivation.

Despite a large number of mango varieties in Indonesia, mango production fluctuates, and its quality is not always guaranteed. This causes Indonesian mangos to be less commercially competitive on both national and international markets².

Wholesalers make a substantial profit from differences in market price and exporter price³. As a result, mango producers/farmers do not get the higher price as promised by exporters, which causes them to reluctantly pay attention to mango quality. The biggest mango production in Indonesia is Java Island, South Sulawesi, West Nusa Tenggara and East Nusa Tenggara. Gedonggincu mangos (*Mangifera indica*

var. Gedong) are produced in West Java, which is centralized in Indramayu, Majalengka and Cirebon

Labels usually carry the importing company's name and logo. Imported mangos from Indonesia are not labeled in Indonesia but once they reach places like Singapore, they are labeled for European markets. A label showing where the mangos originate is important as it would help reduce profiteering by middlemen and encourage European buyers to buy directly from the areas in which mangos are produced, as is the case with Malang apples, Washington apples, and kiwifruit from New Zealand etc. Label must several requirements among others pleasant and nice to be read, has clear information about product knowledge such as where the product originally comes from, information of nutrition content and other ingredients, expire date and selling price at consumer level⁴.

It would be expected that product labeling would also encourage the Indonesian Gedong gincu mango to become even more popular with consumers due to its distinctive taste, aroma, color and shape and therefore it has greater competitiveness on the international market. Consumers was made in markets in the Bandung regency to ascertain how consumers respond to labeling on horticultural products, especially gedonggincu mangos, and whether labeling could encourage Indonesians to buy local mangos at the same price as imported mangos. Consumers were also asked if they believed that labeling

guaranteed product quality. The survey was aimed to find out how much consumers were willing to pay, which groups of consumers were willing to pay more and what consumers thought about profit and loss with regard to labeling.

Literature Review: Origin labeling is defined as origin brand which bears a local name as in the case of Malang apple, Washington apple. Consumers when hearing the word Malang always associate it with apples. Consumers appreciate origin labeling as it serves many functions such as price tag and other contents⁵. Basic information should be clearly seen on the label so that it will encourage consumers to buy the same product. Consumers appreciate origin labeling of the product as long as they are sure of its quality. Local names may indicate the quality of the products⁶⁻⁹. Consumers will pay more for the product with the origin label, they are willing to pay premium prices, which enables producers to make greater profits. In addition, origin labeling enables producers to enter a niche market¹⁰. Different from Becker, origin labeling is hard to use as there are too many producers from different areas. In fact, when repackaging is made, consumers cannot tell where the products come from; therefore, origin labeling is not needed.

The response of consumers to the need of country of origin label in fresh products shows 80% as important, 8% as unimportant and 12% not know. As for processed products, 76% of the respondents think country of origin label is important, 11% unimportant and 13% not know¹¹. The use of origin label brands has reduced imported fruit because consumers are proud of their local products. Consumer perception of origin label brand is important as it will affect consumer decision to buy⁷.

As consumers' education, knowledge, and income are increasing, consumers pay more attention to food safety, product quality, and food distribution, production points. Therefore, origin labeling is required^{8,12}. Companies are also willing to use origin labels and pay more if profitable; therefore, all product information should be provided in origin label to make marketing efficient and prevent different information in addition to increased demand and assured quality¹³⁻¹⁵. Willingness to pay is consumer will to pay more because consumers get more satisfaction with food safety, product attractiveness and durability. Willingness to pay is consumer readiness to pay more because the products they buy are safe for their health.

Willingness to pay is consumer ability to buy a product and in other words it is the reflection of value, service, and sacrifice to obtain a product based on consumer perception. Willingness to pay is related to the utility of the product¹⁶. The amount of money paid by consumers indicates the utility of the product. Willingness to pay is consumer willingness to pay more for a certain period of time. Willingness to pay is affected by internal and external factors such as processing, certification, packaging, labeling, consumer knowledge and awareness of the product.

These factors are more largely dependent on consumer income which is also related to consumer buying power.

Material and Method

The research was conducted from May to October 2013 in Bandung for the reason that gedonggincumangos from Cirebon regency are distributed to Bandung. 200 respondents were taken using random sampling and respondents have consumed gedong gincu at least once. When the respondent have not consume mango, its must be replace with the other respondent. This research also uses secondary and primary from relevant institutions. Data were collected through with in deep study and questionnaires. This investigation aims to find out which consumers are willing to pay more with regard to the origin label used. Data were analysed by discriminant analysis and the calculation is as follows^{17,18}.

Estimation of discriminant function: A discriminant function, also called a canonical root, is a latent variable which is created as a linear combination of discriminating (independent) variables, such that $L = b_1x_1 + b_2x_2 + \dots + b_nx_n + c$, where the b's are discriminant coefficients, the x's are discriminating variables, and c is a constant. This is analogous to multiple regression, but the b's are discriminant coefficients which maximize the distance between the means of the criterion (dependent) variable. Note that the foregoing assumes the discriminant function is estimated using ordinary least-squares, the traditional method, but there is also a version involving maximum likelihood estimation.

Test significance of Discriminant Function: Wilks's lambda is used in an ANOVA (F) test of mean differences in discriminant, such that the smaller the lambda for an independent variable, the more that variable contributes to the discriminant function. Lambda varies from 0 to 1, with 0 meaning group means differ (thus the more the variable differentiates the groups), and 1 meaning all group means are the same. The F test of Wilks's lambda shows which variables' contributions are significant.

Determine statistic test with formula :

$$F = \frac{(n_1n_2)}{(n_1 + n_2)} \frac{(n_1 + n_2 - p - 1)}{(n_1 + n_2 - 2)p} D^2$$

Classification: Based on the discriminant function, the two groups were calculated:

If the individual or object gets score $x = (x_1, x_2, x_3, \dots, x_p)$ in p predictor variable determined, then that individual is included as a member from group 1 (K1) if :

$$|b^t(x - \bar{x}_1)| \leq |b^t(x - \bar{x}_2)|$$

and individual grouping to group 2 (K2) if:

$$|b^t(x - \bar{x}_2)| > |b^t(x - \bar{x}_1)|$$

Accuracy of relative prediction from the model: Press's Q calculate the level of accuracy model prediction. This size is the ratio of the number of correct classification based on discriminant function by the total sample in each group. Press's Q statistics value that has been calculated, then compared with values of χ^2 table with degree of freedom 1 and 95 % confidence level.

Results and Discussion

Consumer Characteristics: Most of consumers' education are from senior high school (53%), undergraduate (29%), and junior high school (18%). Consumers on average earn 2 to 3 million rupiahs (15%), 4 to 6 million rupiahs (38%), and < 6 million rupiahs (47%). Number of people per family varies: less than 3 people per family (59%), 3 to 5 people per family (32%), and more than 5 people per family (9%). The ages of the respondents also vary: in general 25 to 35 years old (67%), and the rest ranging below 25 years old (5%) and above 35 years old (28%).

Consumer Response if Origin Label brand is made effective for Gedonggincu Mango: Origin label is taken from the terminology of *Country of Labeling (CoOL)*; that is, to describe that the product comes from the country or area mentioned. In this respect, the product from the country of origin has *Country of Labeling (CoOL)*. Country of labeling for gedonggincumango has not been made except origin labels from Majalengka, Cirebon, and Indramayu. Origin labeling has the same purpose and function as *Country of Labeling (CoOL)*. What makes these two labels different is their market targets. *Country of Labeling (CoOL)* targets the export market while local origin label targets the domestic market but gradually it aims at the export market. Currently, origin labeling is issued by the Agriculture Department of Horticulture, Majalengka Regency, Cirebon Regency, and Indramayu Regency. Labeling is also used to promote gedonggincumangos during product exhibitions held by West Java Province or in certain events. The following are origin labels:



Figure-2
 Labels from Majalengka, Cirebon, and Indramayu

In general, consumers never see origin labels on mangos. This is true because the origin label is issued by the Agriculture Department in the Regency. Labeling is also limited only for certain exhibitions in which competitive products are promoted

and given as souvenirs to important guests. Promotion is one of the way to increase sale, usually 75 % of the budget is for sale promotion and the rest 25% is making use of advertising¹⁹. It is also found that consumers hardly ever see origin labels. Consumers who have seen origin labels from Cirebon are (28%) and those having seen ones from Majalengka and Indramayu are 7%. Consumers who have seen quality export or best quality Export labels are 87% and those who have never seen both are 13%. Consumers who have seen quality export or best export Quality Brand labels are those from Cirebon who accidentally saw the labels during the exhibition held by the Agriculture Department of Horticulture of Cirebon Regency. According to consumers, origin labels are used only to promote gedonggincumangos. In fact, the label is used for quality assurance in addition to promotion. Consumers will also know where they should complain if they have complaints about the product they have bought. Also, labels are supposed to help mango producers increase their profit. Consumers believe that origin labels show that the products are of quality products (60%) and safe for consumption (74%). Quality is the main factor of consumer's selection in purchasing product²⁰. There is a preference middle to upper income group before they decide to buy to pay attention the kind of product, while other income group choose more on the availability of product and freshness²¹.

Change in Buying Imported Fruit with regard to the Use of Origin Labeling: According to consumers origin labels assure them of product quality so that there is a tendency that they will buy more products. On average, consumers buy another 1 – 3 kilograms per month. This happens because they buy other types of fruit when gedonggincumangos cost more expensive. Substitute fruit ranges from banana (56%), papaya (32%), and others (12%). Papaya and banana substitute mangos due to their cheap price and availability all year round. Price of product is a value that has negotiated between producers and consumer, as usual seller want high price and on the contrary consumer prefer lower price with good quality²². There is a tendency (17%) that origin labels may encourage consumers from the middle class to buy local fruit such as gedonggincu mangos and at the same time buying imported mangos will decrease. Consumers expect that origin labels will provide them with quality assurance (45%), product availability (21%), affordable price (19%), and supervision from relevant departments (15%).

Diference Factors of Cluster Consumers Believing that Origin label assures them of quality and food safety: Testing table is used to find out the variables which show the differences between groups i.e. the group that considers that the label is important and the group that considers that the label is not important.

The testing is done by referring to Wilks lambda value ranging from 0 to 1. The closer to 0 the more different the data of the groups are, and the closer to 1, the data tend to be the same. Testing can be done by looking at p-value at each variable

where if p-value is < 0, 05, the variable is a control variable between the two groups.

From TABLE 1, *p-value*, the variable of income and education has p-value less than 0, 05. Therefore, this variable significantly differentiates consumer groups, one of which considers that the label is important and the other group considers that the label is unimportant.

Table-1
Dominant Variable Indicating the Label is Important

	Wilks' Lambda	F	df ₁	df ₂	Sig.
Age	1.000	0.087	1	198	0.769
Income	0.971	5.984	1	198	0.015
Education	0.970	6.019	1	198	0.015
WTP Majalengka	1.000	0.004	1	198	0.951
WTP Cirebon	1.000	0.005	1	198	0.944
WTP Indramayu	0.984	3.264	1	198	0.072
WTP Export Quality	0.995	1.021	1	198	0.314
WTP Best Export Quality	0.994	1.100	1	198	0.296
Buy Quantity	0.997	0.559	1	198	0.455

From table 2. *p-value*, Indramayu WTP variable has p-value less than 0, 05. Therefore, this variable significantly differentiates consumer groups, one of which considers the label guarantees product quality and the other group considers that the label does not guarantee quality product. This means that consumers will pay more Mango Gedong Gincu from Indramayu, if the label guarantees the quality of the product. Consumers will choose product quality in accordance with the money they have, and therefore, consumers will have different qualities.

Consumer Willingness to Pay with Regard to Origin Labeling: From table 2. *p-value*, the variabel price of gedong gincu mango at Cirebon, export quality price, best export quality price and dan buying quantity has *p-value* less than 0, 05. Therefore, this variable significantly differentiates consumers with WTP more than 40% and those with WTP less than 40%. Therefore, consumers are willing to pay more than 40% if the price of gedong gincu mango at Cirebon has export quality, and best export quality becomes an indicator that the mango has quality and is safe for consumption. The variable of product quantity bought also significantly differentiates consumers with $WTP \leq 40\%$ and $WTP \geq 40\%$. In this respect, if the product quantity bought is less, consumers will pay more than 40%, and if more product quantity is bought, consumers will pay less than 40%.

To find out consumer income in general, the average value is multiplied by canonical coefficient for each variable. Based on the calculation above, the average value of the discriminant

function for the group with its WTP is more than 40% with the label 45690,61 and the average value of the discriminant function for the WTP group is less than 40% with the label-32015,75. This indicates that consumers incline towards WTP more than 40%. The average age of consumers buying mangos with WTP more than 40% is 44 years of age, while the average of consumers inclining towards WTP less than 40% is 36 years of age.

Tabel-2
Dominant Variable of Willingness to Pay

	Wilks' Lambda	F	df ₁	df ₂	Sig.
Age	0.980	4.034	1	198	0.046
Income	0.993	1.375	1	198	0.242
Education	1.000	.067	1	198	0.797
Price in Majalengka	0.943	11.966	1	198	0.001
Price in Cirebon	0.895	23.274	1	198	0.000
Price in Indramayu	0.993	1.466	1	198	0.227
Price Export Quality	0.966	6.987	1	198	0.009
Price Best Export Quality	0.881	26.674	1	198	0.000
Buy Quantity	0.979	4.258	1	198	0.040

Advantages and Disadvantages of Origin Labels: The advantages of having origin label are to gain consumer trust (36%), to show the product is more competitive than other products (33%), to track where the product comes from, who produces it, where it is produced, and how it reaches its consumers (17%), and to promote the product (14%). The advantages among others are moral obligation if the product name is bad (48%), difficulty to improve its bad image when the product is already bad (26%), obligation to deal with consumer complaints (15%), additional cost (6%) and quality control (5%).

Although origin label serves many functions, it also has consequences and responsibility to keep the image of the product. If a label has a bad reputation, it costs a lot of money and takes time to regain a good reputation. If gedong gincu mangos are thought to be exotic, this type of mango will no longer be so when one seller breaks the commitment to quality assurance. Branding costs a lot of money and it takes a long time to recreate the branding to win consumer trust. Producers should quickly respond to the complaints lodged by consumers about the aroma, taste, and appearance of the product when these qualities are different from the label. As we know that agricultural products have a gestation period, the period between planting and harvesting season. Also, the taste of agricultural products will not be the same as it has something to do with nature, which is different from industrial products.

Conclusion

Consumers never see the origin label of Cirebon, Majalengka, and Indramayu and neither do they see Quality Export and Best Quality Export labels. Consumers also believe that the origin label shows product quality (60%) and food safety (74%). There is a tendency (17%) that mangos with origin label encourage consumers from the middle class to buy less imported fruit.

Clusters of consumers who believe that the origin label assure them of mango quality and food safety have different educational backgrounds and incomes. These factors are related with their knowledge and buying power of origin label. Consumer disposed willingness to pay more than 40 % for mango using label origin. This group is consumer who more than 40 years old and their income more than 10 millions.

One advantage of the origin label is to win consumer trust, to show that the product is more competitive than other products, to track where the product comes from, who produces it, where it is produced, and how it reaches the consumers, and to promote the product itself.

The advantages among others are moral obligation if the product name is bad, difficulty to improve its bad image when the product is already bad, obligation to deal with consumer complaints, additional cost and quality control.

Direction for Further Study: The research puts emphasis on consumer behavior with regard to the origin label brands not on gedong gincu mango producers. Further study is expected to focus on producers and which producers are able to follow changes in consumers and their expectations. How much estimated profit is made by producers and how much risk producers will take if origin labeling is used can be analyzed by Risk Management.

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