



# The Promotion of Persimmon became a High Value Commodity Confirmatory Factor Analisis (Case in Garut West Java, Indonesia)

Yosini Deliana<sup>1</sup> and Iskandar Ishaq<sup>2</sup>

<sup>1</sup>Faculty of Agriculture Padjadjaran University, Jl. Raya Bandung – Sumedang Km 21, Jatinangor INDONESIA

<sup>2</sup>Agricultural Technical Research Centre, West Java, Jl. Kayu Ambon Lembang- INDONESIA

Available online at: [www.isca.in](http://www.isca.in), [www.isca.me](http://www.isca.me)

Received 23<sup>rd</sup> November 2013, revised 30<sup>th</sup> December 2013, accepted 20<sup>th</sup> January 2014

## Abstract

*Persimmon is an exotic fruit and exclusive grows in Garut nearby. The phenomena, farmers are still not interested to cultivate even it has a good market. Actually it has over much benefit such as for body slimming, be composed of many antioxidant, prevent heart disease, cholesterol, hypertension, asthma, abdominal pain, etc. The aim of this study is to learn the factors that prevent persimmon promotion to become high value commodity based on consumer expectation on production, product, market and marketing system. Research was conducted between February – March 2012 in Cisurupan which persimmon production centre in Garut West Java. The methodology of this research was survey, used primary, secondary data and data was analyzed by factor analysis. Responden was 100 persons who buy dry persimmon in the traditional market, and was taken by systematic sampling. The study shows that dominant factor for promoting are the lack information of the producer on the length of drying, color, taste, aroma, selling point, price, product diversification opportunity, the power of word of mouth and practically to carry. Contribution of this study is to give recommendation to the government, university and industry in how to deliver promotion on persimmon to become high value commodity.*

**Keywords:** Promotion, dry persimmon, high value commodity, factor analysis.

## Introduction

In Indonesia, persimmon harvest ones a year, the plantation between the ages of fifty to one hundred years and never rejuvenated again. The limited production and only exist in particular month, persimmon became unpopular fruit, consumer rarely to see and to consume. Garut district is a persimmon production centre in West Jawa, which was cultivated about 600 hectares and was planted by 300 Farmers<sup>1</sup>. The research result based on “*The Descriptor for Characterization and Evaluation in Plant Genetic Resources of Persimmon*”<sup>2</sup> concerns the type of persimmon growing in Garut which is categorized into astrinjen type with two varieties i.e. Hachiya or locally known as Kapas and Eureka or locally known as Reundeu. On average one persimmon tree produces 25 – 200 kilograms, but the Eureka variety has lower production than the Hachiya. The persimmon (*Diospyros kaki* L.f) existing in Indonesia originated in China and countries that grow persimmon in large quantity are China, Japan, New Zealand, Italy, Israel, Brazil and United States (California). In Asia, persimmon is grown mostly in Indonesia particularly in Java and Sumatra, Malaysia, and Thailand. Recent studies about persimmon in Indonesia and other countries such as China only focus on production and yet no study about how to promote persimmon to become a high value commodity. This study will try to analyze this issue based on consumer perception on production process, product, market opportunity and marketing system.

The result reveals that fresh persimmons found in the market are lacking in quality and quantity and persimmon production is not

sustainably guaranteed. This has something to do with the harvest season which takes place once in a year. Persimmon tree has five phases of growth which are leaf shedding (August), shooting phase (September – October), blooming phase (September – October), fruiting and fruit bearing phases (November – April) and ripening phase (May – June) and harvesting phase or season around July. In a bumper harvest season, Reundeu (Eureka) variety produces 25–50 kilograms/tree while Kapas (Hachiya) variety produces 50 – 75 kilograms/tree, and the total persimmon production in Garut in 2010 was approximately 1, 125 quintals. The production is lower compared with that in other countries such as China and Jepang with 54.05–62.50 kilograms/tree (eight-year-old trees). Low production of persimmon is seemingly caused by farmers who have replaced persimmon trees with vegetables without their realizing that persimmon has high nutritional and economic values. In addition, some home industries process persimmons into a sun-dried product called *sale*. In fact, persimmon can be diversified into products such as puree, jelly, dodol (a toffee-like, sweet food delicacy), sun-dried persimmon, agar-agar, ice cream, and many others. This data indicates that persimmon has a prospect market to be taken into business but yet the producer are still not considering to grow persimmon and the consumer are not yet understand the benefit of this fruit because only few information available.

Physical and non physical attributes are two product attribute, the physical attribute describes product characteristics for example dimension, variety, trademark, color, packaging, price, taste and others<sup>3</sup>. Meanwhile, the non physical attribute is concerned with

consumers' opinion or perception of the product<sup>4</sup>. Persimmon has a unique shape, taste, and aroma but people especially youth are lack of knowledge on this. It shows us that there is an asymmetric information between producer and consumer. From the producer side, they are lack of information about consumer preferences and from the consumer side, they are lack of information about the benefit of consuming this exotic fruit. This asymmetric information can be reduced by enforcing the roles of industry, government and university.

This study is limited on the analysis of consumer perception on persimmon that has been processed at home industry. Generally, consumer are local people thus they will understand the production process, product characteristics, market opportunity and the marketing system. Meanwhile marketing mix such as place, price, product and distribution is included in marketing communication. From what they understand and observe, people will communicate about their preferences thus this information can actually can make them to be loyal consumers<sup>5</sup>.

The research is primarily concerned with factors that inhibit the persimmon from becoming a high value commodity from consumers' point of view. For instance, consumers will like sun-dried persimmon if their expectations with regard to production process, product appearance, market potential, and marketing system are fulfilled. If these inhibitions can be overcome, a large number of consumers will be interested in buying sun-dried persimmon. As a result, there will be many producers interested in running their business if their products are appreciated by consumers. Consumers are willing to pay more for sun-dried persimmon if their expectations of quality, quantity, taste and other factors are met.

**Literature Review:** In the past, model of individual purchasing process can be explained from stimulus, perception, learning and responds. Perception and learning are affected by external factors. Promotion is more related to retaining present customers rather than new customers<sup>6,7</sup>. The other side, the customer loyalty is an important issue beyond transaction and repeat purchasing<sup>8-10</sup>. Moreover, purchasing model also considered awareness level of consumers i.e. i. Unawareness, those who have never heard of the product, ii. Awareness, those who know of the existence of the product but do not know of its advantage, iii. Comprehension, those who comprehend the product but are not yet convinced that they want to buy it, iv. Conviction (interest and intention), those who are convinced about the merits of the product but haven't gotten around to buying and v. action (purchase): those who present the product<sup>11</sup>. Consumers in purchasing persimmon follow this process, depending on external and internal factors. Consumer expectation to processing industry can be captured from production, product, market opportunity, and also marketing system can actually improve market share and profitability. Using alternative products, this will help consumers to get product that suitable to their preference and thus will create higher satisfaction to their next decision<sup>12</sup>.

In the context of information (learn), attitude (feel) and behavior (do) both producer and consumer can be influenced by the external factor such as government policy and other related. Farmers to be inclusively involved in modern market, institutional innovation is become important role for the development of supply chain management<sup>13</sup>. Institutional innovation need to be enrolled on reducing risk and transaction cost which still become a burden for small farmers. His arguments also inline with<sup>14</sup> which also argued that in addition to the government and industry roll in their policy, the university need to contribute their role in synchronizing between theory and practices that need to be simultanly merge. Therefore, from now on not only producer, consumer that determine the process, but also the government, and the university need to contribute on the accessibility of information and this theory is known as Triple helix model.

**Materials and Methods**

The definition of high value commodity is one that has potentially high value in market place, it can be derived from its uniqueness, shape, and aroma<sup>15</sup>. The research employs an explanatory survey method and is rationally empirically tested. The object of the research is sun-dried persimmon consumers with regard to their opinion about production process, product appearance, market potential, and marketing system. The research aims to reveal the inhibiting factors that prevent persimmon becoming a high value commodity with focus on consumers' opinion about the persimmon processed in home industries. It is expected that by finding out the inhibiting factors, consumers' interest in buying this product will eventually rise thereby encouraging all of the producers to grow persimmon.

Data collecting was conducted from February – March 2012, and the area was purposively selected i.e. persimmon production center in Garut West Java. The research was located in production centre at Barusuda village, Cigedug, Giriawas village, Cikajang and Cisarupan village, Cisarupan. As many as 100 people who bought sun-dried persimmon in the traditional markets around the locations were systematically taken as a sample. Primary data from the respondents through interview based on the prepared questionnaire were collected. Factor analysis is used to determine the sequence of the inhibiting factors according to the consumers so that by eliminating those factors, dried persimmon can become a high value product. Type of data used in the research is ordinal with Likert measurement scale between 1-5. Value 1 is for the lowest answer and 5 for the highest answer. Similar research was conducted by on choosing product attributes when consumers purchasing products<sup>16</sup>.

**Model Analysis:**

$$\begin{aligned}
 X_1 &= \lambda_{11} \xi_1 + \varepsilon_1 \\
 X_2 &= \lambda_{21} \xi_1 + \varepsilon_2 \\
 X_p &= \lambda_{p1} \xi_1 + \varepsilon_p \\
 X_1, X_2, \dots, X_p &= \text{Indicator} \\
 \xi_1 &= \text{factors from } X_1 \\
 \xi_2 &= \text{factors from } X_2 \\
 \xi_p &= \text{factors from } X_p
 \end{aligned}$$

In the equation above, inter-correlation between p indicator is explained by m common factor. Usually, it is assumed that  $m < p$  and the sum of unique factor will be the same as the indicator. The objectives of factor analysis are<sup>17</sup>: i. Identifying the number of the smallest common factors that can describe the correlation among indicators. ii. Identifying through factor rotations the factor solution that is most acceptable and logical. iii. Estimating *pattern dan structure loadings, communalities, dan unique variances* of indicators. Iv. Providing interpretations of common factor.

**Results and Discussion**

General Description of the Respondents: The result shows that most dominant age group of the consumers is between 26 and 35 years old which is 75% and the vast majority of the consumers are women (84%). They are generally senior high school graduates (63%). Education as a psychological factor plays an important role in choosing type and quality of the food they consume. Overall, these consumers buy dried persimmon for snacks not for presents due to its cheap price. On average, the consumers of dried persimmon earn from 2.5 to 3 million monthly, and they are mostly housewives. Consumers going to traditional markets intend to buy all the things they need and they don't purposely intend to buy dried persimmon.

**Analysis Factor:** Factor analysis is one of analytical technique used to learn the underlying dimensions or regularity of a symptom. This technique mainly aims summarize information composed of a number of variables into a little group. Factor analysis is mainly used to subtract data, in other words it is used to summarize a number of factors become smaller group of variable. Subtraction is done by looking at the interdependence of several variables that can become one variable called factor so that variables or dominant or important factors are found to be further analyzed.

The research reveals that persimmon has not become a high value product due to the fact that the producers do not have the information about what consumers want in terms of production process and product hygiene. In addition, the product quality has not fulfilled consumers' expectation and producers are also less aware of persimmon market potential and marketing system information.  $R^2$  is 82.56% are factors that consumers consider while 17.44% are the factors they do not consider. Confirmatory Factor Analysis, standard error, critical ratio, significant p-value and indicators description for inhibiting factor could be seen from Table1 to Table 4.

**Table-1**  
 Conformatory Factor Analysis, loading factors, standard error, critical ratio, significant p-value and indicator description for production process

Construct	Indicator	Statement	Loading factors	S.E.	C.R.	P
Production Process	X <sub>1</sub>	Fruit Peeling techniques	0.49	-	-	-
	X <sub>2</sub>	Length of production process	0.69*	0.43	3.12	1.99
	X <sub>3</sub>	Length of drying	0.87*	0.49	3.14	1.99
	X <sub>4</sub>	Place of drying	0.68*	0.37	3.11	1.99
	X <sub>5</sub>	Alternative drying tools	0.53	0.34	2.71	1.99
	X <sub>6</sub>	Storage	0.47	0.34	2.51	1.99
	X <sub>7</sub>	Production tools	0.55	0.31	2.76	1.99
	X <sub>8</sub>	Hygienic production process	0.47	0.46	2.51	1.99
	X <sub>9</sub>	Hygienic production tools	0.44	0.33	2.40	1.99
	X <sub>10</sub>	Hygienic worker	0.06	0.37	0.40	1.99

**Table-2**  
 Conformatory Factor Analysis, loading factors, standard error, critical ratio, significant p-value and indicator description for product performance

Construct	Indicator	Statement	Loading factors	S.E.	C.R.	P
Product Performance	X <sub>1</sub>	Taste	0.75*	-	-	1.99
	X <sub>2</sub>	Aroma	0.71*	0.21	4.67	1.99
	X <sub>3</sub>	Color	0.82*	0.21	5.29	1.99
	X <sub>4</sub>	Texture	0.41	0.27	2.69	1.99
	X <sub>5</sub>	Freshness	0.47	0.20	3.06	1.99
	X <sub>6</sub>	Water Content	0.11	0.28	0.70	1.99
	X <sub>7</sub>	Quality	0.67	0.26	4.37	1.99
	X <sub>8</sub>	Peel Thickness	-0.08	0.19	-0.60	1.99
	X <sub>9</sub>	Vitamin C content	0.32	0.16	2.10	1.99
	X <sub>10</sub>	Shape	0.32	0.21	0.60	1.99
	X <sub>11</sub>	Size	0.12	0.23	0.80	1.99

**Table-3**  
**Conformatory Factor Analysis, loading factors, standard error, critical ratio, significant p-value and indicator description for market potential**

Construct	Indicator	Statement	Loading factors	S.E.	C.R.	P
Market	X <sub>1</sub>	Price	0.89*	-	-	1.99
Potential	X <sub>2</sub>	Packaging	0.17	0.21	1.17	1.99
	X <sub>3</sub>	Availability	0.56	0.14	4.47	1.99
	X <sub>4</sub>	Product diversification opportunity	0.88*	0.11	8.81	1.99
	X <sub>5</sub>	Bought as presents	0.89*	0.10	8.79	1.99
	X <sub>6</sub>	The power word of mouth	0.81*	0.11	7.60	1.99
	X <sub>7</sub>	Selling point	0.90*	0.10	9.21	1.99
	X <sub>8</sub>	Market penetration	0.46	0.16	3.43	1.99

**Table-4**  
**Conformatory Factor Analysis, loading factors, standard error, critical ratio, significant p-value and indicator description for marketing system**

Construct	Indicator	Statement	Loading factors	S.E.	C.R.	P
Marketing	X <sub>1</sub>	Product Continuity	0.36	-	-	1.99
System	X <sub>2</sub>	Supply availability	0.14	0.47	0.96	1.99
	X <sub>3</sub>	Prestige	0.17	0.44	1.16	1.99
	X <sub>4</sub>	Importance of Labeling	0.30	0.30	2.10	1.99
	X <sub>5</sub>	Practicality	0.99*	0.29	6.27	1.99
	X <sub>6</sub>	Loyalty of consumer	0.52	0.34	3.59	1.99
	X <sub>7</sub>	Write expired date	0.50	0.36	3.47	1.99

**Consumer Perception of Production Process:** Dried persimmon has been made by housewives in the production center, and the process is easy and relatively cheap; therefore, people in Garut are already familiar with dried persimmon production. Dried persimmon production stages are i. peeling, ii. first sun-drying for 3 days on bamboo winnows, iii. first softening by squeezing the fruit manually, iv. second sun-drying for 3 days, v. second softening by pressing fruit with wooden boards, vi. third sun-drying for 4 days and pressing fruit with a tool, vii. fourth sun-drying for 3 days until white glucose liquid comes out from the fruit. Dried persimmon is preserved by fumigation with carbon monoxide (CO<sub>2</sub>) along with the packaging using cardboard boxes coated with plastic. One cardboard box contains 60 kilograms and can be stored for 3 months. The longer dried persimmon is stored the tastier it will be.

One quintal of persimmon can be made into 30 kilograms of dried persimmon. Dried persimmon producers are around 10 – 12 in each village, and on average they process 1 – 2 tons of persimmons monthly. Producers directly buy up persimmons from farmers for Rp. 15,000 per tree which weighs around 25 kilograms. One kilogram of dried persimmon costs Rp. 15,000. On average, producers earn around Rp. 4.5 – Rp. 8.7 million monthly. Therefore, during three month bumper harvest, dried persimmon producers earn Rp. 13.5 – Rp. 26 million with 42% margin. The income is quite high as it is managed as a sideline. If managed seriously, it may generate higher profit provided that the inhibiting factors are dealt with.

Based on consumers' perception, dry persimmon can be made high value commodity if producers are knowledgeable about what consumers want. Dried persimmon production is simple which means it does not require special skills, but better skills will contribute to better products. So far, drying activity relies on the sun and no oven has been used. As a result, when it rains, drying is not optimized has impact on the quality. The quality of the product is largely dependent on the length of drying. Well dried products can be stored for three months. Non influencing factor is hygienic workers (0.06) as in general producers employ their family members who are easily monitored.

In terms of production process, it is revealed that producers do not have the information about what consumers want, specifically about length of drying (0.87). According to consumers, if producers are aware of this information, persimmon products and their taste may last longer.

Theoretically, information has to be well communicated so that this can be of benefit to both producers and consumers. If producers pay attention to what consumers want, consumers will be loyal and thus increasing producers' income and increasing their market share. Now, production process is not optimal which needs attention from the government in terms of sustainable guidance about the production process. Action research can also be conducted by academicians by way of providing producers with useful advice because producers are determined to pay attention to what consumers want in order to increase their market share. Therefore, there should be

integrated communication between the government, universities, and producers.

**Consumer Perception of Product Performance:** Some studies show that consumers buy products due to their appearance, however, consumers think that the appearance of dried persimmon is not attractive. As for product quality and appearance, it is revealed that producers do not have the information about what consumers want in terms of color (0.82), taste (0.75) and aroma (0.71). These three sub factors are what consumers can easily taste, smell, and notice. Thus, processing technology is needed to make persimmon color more attractive and aromatic by adding natural additives. Water content and taste are important for consumers in choosing a product and are supported<sup>18,19,20</sup>. Factors that are not influential are water content (0.11), peel thickness (-0.08), shape (0.09) and size (0.12). What consumers consider important is taste not the four factors mentioned above and the most important factors is taste.

**Consumer Perception of Market Potential:** Persimmon is locally known as Cikajang apple and in English it is called oriental persimmon. In China, it is called *shi* and in Japan it is *kaki*. In Greece, this fruit means food of God. As far as vitamin is concerned, persimmon contains higher vitamins A and C than apple does. It also contains higher fiber, tannin, and phenol which can control cholesterol level and high blood pressure. Tannin that tastes bitter can be used for making cloth and paper, handicraft last long, and it can also be used for making traditional drink in Japan and healing hypertension.

Persimmon has high economic value because almost all its parts can be eaten except its peel. Persimmon leaves can be used to cure stomachache, and its fruit stem can be used to cure fever. Persimmon meat is useful for food poisoning which serves to neutralize the toxic in the body, prevent cancer, inhibit early aging, and good for preventing lungs disease. In addition, persimmon has high nutritional values. One hundred grams of persimmon contain 80 grams of water, 0.7 grams of protein, 0.4 grams of fat, and 19.6 grams of carbohydrate, particularly fructose and glucose, and persimmon is rich potassium and vitamin c<sup>1</sup>. Eventhough dried persimmon can be a high value commodity, but farmers have significantly changed their persimmon farming into vegetable farming because growing vegetables is more economically profitable; besides; persimmon harvest takes place only once a year. On average, persimmon farmers earn Rp. 5,237,763 annually, but if they grow potatoes or cabbages, they earn approximately from 8 to 10 million annually

As far as market potential is concerned, producers do not have the information related to selling point (0.90), price (0.89), potential of being a variance product (0.88), bought as presents (0.88), and the power of word of mouth (0.81). Promotion can be done by word of mouth, one of the studies reveal that this kind of promotion is more effective than advertisement or other

media. Consumers judge the use of product based on their perception of what they receive and give or based on other people's opinion about the product<sup>21,22,23</sup>. Actually, persimmon has very good potential to be special food from Garut because this regency is the only persimmon center in West Java. Persimmon can be diversified into various kinds of products, but there should be sustainable and integrated consultancy programs from Agricultural Office, Industrial Service, and academicians. Packaging is another factor that is not influential (0.17) because consumers do not care about the packaging, but to make dried persimmon special food from Garut, packing can be an important factor.

**Consumer Perception of Marketing System:** Fresh persimmon marketing involves middlemen and wholesalers. The wholesaler sells persimmon to Jakarta and Bekasi (43%), Bandung (33%), Palembang (24%). Before being consumed, persimmon from Garut which belongs to astrijen type needs post harvest treatments. Soaking persimmon in tubs by using lime solution (CaCO<sub>3</sub>) 12.5 – 15.0 grams /liter is one of the treatments.

In each village, there are 3 – 6 middlemen who deal with post harvest treatments, and each middleman has 4 –5 tubs with 4.8 M<sup>3</sup> and can hold 2 tons of persimmons. Length of soaking is approximately 3–5 days depending on the surrounding temperature. Persimmon shrinks to 15–25% after soaking. Farmers expect to have a new variety of persimmon that does not need post harvest treatments such as soaking, etc.

Persimmon trees bear fruit once a year with the harvest period of 3 – 6 months annually. During the harvest season, production rises causing the price to plummet. One kilogram of persimmons in the market costs around Rp. 4000 – Rp. 5000 (8 – 10 persimmons); on the other hand, farmers sell their persimmon for Rp. 750 per kilogram (farmer's share 18.75%). To increase the price of the persimmon, technology for storing fresh fruit is needed so that it has good quality and lasts longer. Therefore, freshly harvested persimmons do not have to be immediately sold. Instead, fresh fruit can be stored and sold once the price goes up. In addition, better processing technology is necessary to create high value products. Middlemen are not involved in marketing dried persimmon because producers directly sell it to retailers in the market. Thus, if marketing chain is short, home industries producing dried persimmon are likely to enjoy a good price and this kind of business may survive. In reality, there are a lot of factors that prevent dried persimmon businesses from surviving.

Last, producers do not have the information about their consumers' need in terms of product practicality to carry (0.99). Now, persimmon is sold without packaging; therefore, it is not practical to carry if bought for presents or distributed to other areas. Non influential factors are amount to be fulfilled (0.14) and prestige (0.17). This is because dried persimmon is not the only special food from Garut; therefore, if the demand is not

met, other products such dodol Garut, cokodol (chocolate dodol), keripik kulit (crispy thin chip made from cow skin) and others can replace dried persimmon. Recently, consumer perception of dried persimmon is not an inferior good any more but it become a normal good.

**Research Implication:** Information is very important for producers to fulfill what their consumers want, and if consumers are already loyal, producers will eventually reap the benefits and increase their market share. Information that is not well disseminated is caused by an ineffective way of communication. This happens because of lack of integrated communication between the government, universities, and industries as in triple helix model. This research serves as feedback for the government in terms of related management of production process, product quality, market potential, and marketing system. Universities can conduct action research and provide producers with useful advice on how to increase added value of the products they produce. Similarly, industries should make an effort to follow the market changes and accommodate consumers' expectations and wants.

The contribution to the theory of communication, that to achieve the goal effectiveness of communication, attention must be given to not only the sender and receiver but also other factors such as government, universities, and related institutes.

### Conclusion

Persimmon can be a product that has a high value as long as the producer know the information of production process, product appearance, marketability and marketing system. Producers do not know the information needed by consumers regarding persimmon in terms of its length of drying, colour, taste, aroma, price, selling point, potential price of being varied products, power of word of mouth, and practicality to bring. This research is expected to give contributions to the government policy, industries, and academicians to promote persimmon to be a high value commodity. In addition, the communication among the government, industries, and academicians has to be integrated known as triple helix model.

**Direction for Further Study:** This research simply looks into consumers' perception of production process, product appearance and quality, market potential, and marketing system. Further research looks into how interrelated communication interaction between government universities and industries can make persimmon a high value commodity. This research can be analyzed by dynamic system which can describe the simulation and effectiveness of the communication.

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