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EDITORIAL

The Journal of Agribusiness Marketing is a publication of the Federal Agricultural Marketing Authority (FAMA) of Malaysia that aims to provide a forum for scholarly works in agribusiness and agricultural marketing relevant to Malaysia, the ASEAN region and the rest of the world.

All manuscripts received are subjected to the double-blind review process prior to publication. The Chief Editor initially reviews each article that is received, and if judged suitable for this publication, it is then sent to a minimum of two referees for double blind peer review. Based on the referees' recommendations, the paper is either accepted as is, returned to authors for revision together with comments from the review, or rejected. The double-blind review process ensures that the requirement of objectivity is fulfilled.

Currently, the Journal of Agribusiness Marketing has twenty-four Associate Editors on its editorial board who review manuscripts prior to publication. The journal welcomes contributions from staff of local and international institutions or organisations who are specialists in their respective fields related to agribusiness marketing to join our editorial board as reviewers.

The fifth issue of the Journal of Agribusiness Marketing presents four articles that discuss pertinent issues related to the marketing of fresh and processed agricultural products. Kusumawaty, Maharani and Edwina in their article, **"Perceived Quality of Coconut Sugar by Producers, Traders and Downstream Industries in Indragiri Hilir District, Riau Province, Indonesia"** report on a study which was carried out to identify the perceived quality of coconut sugar by three different groups, i.e., producers, traders and buyers. Some aspects of quality were assessed, such as colour, texture, aroma, flavour, weight, shape, shelf life and packaging. It was found that, in general, the producers, traders and buyers shared similar quality perceptions of coconut sugar. However, there were differences in terms of colour preferences. These findings provide vital information for producers to reconsider the use of sodium metabisulphite, which has been used to enhance the colour of coconut sugar.

Siti Hasnah, Lee and Wong in their article entitled **"The Influence of Food Product Packaging Attributes in Purchase Decision: A Study among Consumers in Penang, Malaysia"** discuss the effects of verbal and visual attributes of food packaging in consumer purchase decisions. The study found that information concerning the packaging and the shape of the packaging has a significant impact on the purchase decisions for processed food. However, attributes such as graphics, colour, size and material, were not significant in influencing the purchase decision. The results are important to marketers and food manufacturers in devising an appropriate packaging strategy for processed foods in the Malaysian market.

In the article, **"Factors Influencing Fruits and Vegetables Consumption Behaviour among Adults in Malaysia"**, Khairunnisa, Shahrim, Roselina, Noranizan, Nurhasmilaalisa

and Syuhailly examine the factors that influence fruits and vegetables consumption behaviour among adults in Malaysia. Based on convenience sampling involving 1200 respondents in seven cities in Malaysia, the study found that attitudes, habits, social influence and availability had significant effects on intention to consume fruits and vegetables. Also, environmental factors were more effective than personal factors to influence intention to consume both fruits and vegetables. In terms of environmental factors, availability was found to be more effective than social influences towards fruits and vegetables consumption behaviour. The study concluded that providing more locations to offer fruits and vegetables would help to increase the consumption.

The final article, **"Small Farmers and Factors that Motivate them Towards Agricultural Entrepreneurship Activities"** by Riduwan, Muhammad Hasmi, Noorliza and Anees Janee identify the factors that motivate small farmers to engage in farming and entrepreneurial activities. Face-to-face interviews were carried out involving a total of 400 respondents from small farmers in Peninsular Malaysia. The results indicate that some of the factors that prevented small farmers from engaging in agribusiness activities were knowledge of agribusiness management and marketing, capital, the environment, and availability of training.

Bisant Kaur (PhD)

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PERCEIVED QUALITY OF COCONUT SUGAR BY PRODUCERS, TRADERS AND DOWNSTREAM INDUSTRIES IN INDRAGIRI HILIR DISTRICT, RIAU PROVINCE, INDONESIA

Yeni Kusumawaty*
Evy Maharani
Susy Edwina

ABSTRACT

Coconut sugar (gula kelapa) production is a common economic activity of coconut farmers in the Indragiri Hilir District. It is concentrated in the Tempuling sub-district. The producers have low bargaining positions compared to that of the traders or wholesalers. Producers' lack of knowledge about end-consumers' perceptions of good quality coconut sugar makes the situation worse. The study was aimed at identifying the perceived quality by the producers, traders and buyers of coconut sugar. Aspects of quality assessed were colour, texture, aroma, flavour, hygiene, weight, shape, shelf-life and packaging. In general, the producers, traders and industries shared similar quality perceptions of coconut sugar which is similar to the Industrial Standard of Indonesia (SII). However, there were differences in colour preferences. The majority of producers preferred pale colour coconut sugar while the majority of the traders and industries preferred reddish brown coconut sugar. These findings offer guidelines for the producers to reconsider the use of sodium metabisulphite which has been used to enhance pale-colour coconut sugar.

Keywords: Brown sugar, coconut sugar, perceived quality, consumer preference, *gula kelapa*, SII

INTRODUCTION

Coconut sugar (coco sap sugar, brown sugar or *gula kelapa*) is produced from fresh coconut sap, which is tapped from the coconut flower stalks and boiled (Prakobsil et al., 2010). This type of sugar has been widely used as an ingredient in daily food and beverages in Asian communities (Singsoong et al., 2010). Although there are other kinds of palm sugar such as *arenga* sugar and *nypa* sugar, coconut sugar is the most popular one. According to Prihatini (2008), it serves as a sweetener with a distinctive flavour which is not easily substituted by other kinds of sugars. It also serves as a natural brown colouring agent for a variety of food and beverages.

Coconut sugar is getting more attention nowadays due to worldwide interest in traditional taste and research findings about new health facts of sugar, especially organic palm sugar.

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Coconut sugar has a low Glycaemic Index (GI) so it is good for diabetics and suitable for weight maintenance (Agribusinessweek, 2008; Philippine Coconut Authority, 2004). Some coconut sugar producing countries are Malaysia, Thailand, Philippines, Cambodia, India and Indonesia.

Coconut trees grow all over Indonesia, in plantation areas or around the houses. Most of the trees (97%) belong to small-scale farmers with average area of one hectare per household (Budianto & Allorerung, 2003 in Supadi & Nurmanaf, 2006). Riau Province in Sumatra is the largest coconut centre in Indonesia covering 547 hectares, producing about 630 tonnes of coconut a year. In this province, the coconut plantation area with the highest production is Indragiri Hilir District. In 2005, this district had 448 hectares of coconut planted area comprising 82 per cent of the total coconut planted area in Riau province, contributing 479 tonnes (73% of the total coconut production in the district) (Central Bureau of Statistics, 2006).

Nowadays, the coconut farmers mostly still rely on copra-based products with a lower price in the market. Therefore, for the last 30 years, there is no significant improvement on the income of coconut farmers. In such condition, coconut sugar production provides opportunity for the coconut farmers as it can provide relatively better income than that of copra-based products for small scale farmers (Tarigans, 2005; Damanik, 2007).

Coconut sugar production is a family economic activity of the majority of coconut farmers in Indragiri Hilir District which is mostly concentrated in Tempuling sub-district. In spite of the relatively better income, the coconut sugar producers still live in poverty. This condition is partly related to very low bargaining position of producers compared to the power of intermediate sellers or wholesalers (*toke*/*tengkulak*).

Almost all coconut sugar produced is distributed through intermediate sellers who are the price-makers (Romdhon, 2003; Anonymous, 2008; Maharani, Edwina & Kusumawaty, 2009). Previous research in Indragiri Hilir District indicated when traders are the price makers and coconut sugar producers face monopsony market, price transmission to producers will not occur even though the price in higher level market increases. This condition will decrease producers' revenue and will increase poverty (Aris, 2011).

Another problem in coconut sugar production is quality. In terms of exported sugar, problems of the quality are the use of sodium bisulphite and product type. Most producers make ordinary brown sugar while worldwide market needs crystallized sugar. In terms of local consumption, the problem is the use of chemical preservatives which started about 20 years ago to replace natural preservatives (Kompas, 2003). This affects sugar attributes such as colour, taste and shelf-life. It may relate to producers' lack of knowledge in good quality attributes according to end-consumers and industries.

Improving the market opportunity by improving the quality of coconut sugar should take into account the consumers' perception of quality. Consumers' acceptance of coconut sugar is determined by the quality conformance of products to their needs. Previous research by Maharani et al. (2009) on the local consumers' attitudes toward Tempuling coconut sugar indicates a difference in perception of quality. Some consumers prefer darker-coloured

(brown) coconut sugar while others prefer light-coloured (yellowish) coconut sugar. The description of product quality must be tailored to the criteria of quality desired by consumers. One important source of information is the existing marketing institutions, such as brokers/traders who act as intermediaries between producers and consumers. Besides the traders' point of view, it is also important to identify the quality criteria according to industrial consumers as the end-users of coconut sugar, as these industries have a significant role in absorbing the products.

Therefore, this study was aimed at identifying the description of quality according to traders and industrial consumers (small-scale traditional food industries) of coconut sugar. The criteria will be of great value to keep the farmer-producers informed of what is expected from their coconut sugar product. Having known the expected criteria, the producers will be motivated to improve the product quality. With better quality, including longer shelf-life, producers will have more opportunity to find other traders/customers to sell their products at better prices or have better bargaining positions towards a more prosperous condition.

LITERATURE REVIEW

Coconut Sugar Industry

Coconut sugar production in Indragiri Hilir District is a common source of income for many of the local households. In this district, Tempuling sub-district is the production centre of coconut sugar. Similarly in many other Asian countries, most production of coconut sugar is a traditional production which is on small scale, and the steps and methods relying on experience or indigenous knowledge (Prakobsil et al., 2010). Coconut sugar is a prospective product due to high demand for domestic use and export. According to Disperindag of Riau Province (2009), the demand for coconut sugar in Riau Province was 30,000 tonnes for 2009 while monthly demand was 5,000-6,000 tonnes.

The main markets for the coconut sugar industry are industrial customers and households. The approximate percentage for households is 50 per cent, sweet soy sauce industry 30 per cent, food industry 10 per cent and other industry 10 per cent. Almost all production, high or low quality are absorbed by the markets. Low-quality coconut sugar is commonly supplied to the sweet soy sauce industry. Indonesian coconut sugar is exported to some countries such as Japan, Canada, The Netherlands, Germany, Singapore and Saudi Arabia. The demand from Japan is 200 tonnes per month, which can only be fulfilled 26 tonnes each month or 13 per cent of the total demand (Regional Management Barlingmascakeb, 2011).

In the Tempuling production centre of Riau Province, the production process starts with filtering the previously tapped fresh coconut sap. The sap is boiled and then stirred occasionally for about 2-4 hours to evaporate the water. The boiling time depends on the quantity of the sap cooked in a large metal wok. When the cooked sap becomes very sticky with brownish colour, it is moulded in dried bamboo tubes until the texture becomes hard. The cylindrical coconut sugar is ready to be taken out of the moulds to be packed. The products will be arranged vertically in a large clear plastic bag of 25 kilograms (local term: *kampit*).

In the process of tapping the sap in the Tempuling sub-district, producers use sodium metabisulphite and *resak* wood chips as preservatives. According to Richter and Dallwizt (2000), *resak* wood (Cotylelobium spp.) is a kind of commercial timber with brown red colour. The doses of both preservatives vary among the producers; however, many of the producers applied about 1.5 teaspoons of sodium metabisulphite combined with 1 tablespoon of *resak* wood chips into the sap containers (jerry cans). Similarly, coconut sugar production in Thailand is also modernized with the use of chemical preservatives to prevent the coconut sap from deterioration (Singsoong et al., 2010).

Coconut Sugar Quality

The high demand for coconut sugar in the local and export markets has not been supported by product quality. Previous research in Java showed that the use of sodium metabisulphite by coconut sugar producers exceeded the maximum threshold, which can certainly cause negative effects to the health of consumers. However, there is an opportunity for an alternative preservative, as based on organoleptic tests carried out, coconut sugar with the addition of 150 ppm sodium benzoate is the preferred palm sugar for consumers in terms of texture and flavour (Christian, 2011).

In general, coconut sugar quality in the market is determined by the aspects of colour and shelf-life. Well-regarded coconut sugar is reddish brown, while those considered to be of poor quality is dark (blackish) or white. Good quality coconut sugar lasts up to two months if tightly wrapped in plastic, while the low-quality coconut sugar will melt after one month. Quality is affected by the freshness of palm sugar sap, cooking and the use of preservatives. Longer cooking time and excessive use of natural preservative (limestone) resulted in blackish coloured sugar, while the use of chemical preservatives (sodium metabisulphite) resulted in pale/white coloured sugar (Kompas, 2003).

According to the Indonesian Government, the standard of quality for coconut sugar covers the physical appearance, aroma and taste, and chemical content such as water and sucrose. The standard does not specify a particular shape of coconut sugar, as long as it is in proper and normal solid (firm) condition. The colour can also vary from yellowish brown to brown, while the taste and aroma are expected to be natural. The standard code is the Industrial Standard of Indonesia (SII) 0268-85 (Table 1) which is the revised version of SII 0286-80.

There are many variations of traditional coconut sugar production which affect its overall quality. Problems in the production processes are generally caused by lack of knowledge of the producers about good manufacturing techniques (Hori, Surjoseputro, Purnomo, Foe, & Hashimura, 2001). In the majority of the coconut sugar production areas, the production process has not been standardized among the small scale producers. A producer might produce different quality of coconut sugar in different times due to internal and external factors (Supomo, 2007).

According to Susilo (2008), this is also the case with the quality of coconut sugar in the Tempuling production centre. In terms of size, coconut sugar produced is also not uniform, because producers use dried bamboo tubes of different diameters as moulds to shape the

sugar. The colour, flavour and texture also vary depending on the length of cooking and the use of sap preservatives. Another quality problem is the presence of contaminants in the sugar produced. The coconut sugar often contains the remains of *resak* wood chips (used as natural preservatives), coconut pulp and clay.

Table 1: Standard of Quality for Coconut Sugar of SII 0268-85

No.	Quality Criteria	Requirements
1	Appearance	
	Shape	Normal solid condition
	Colour	Yellowish brown to brown
2	Taste and aroma	Specific
3	Water	Maximum 10%
4	Ash	Maximum 2%
5	Sugar as sucrose	Minimum 77%
6	Water insoluble part	Minimum 1%
7	SO_2 residue	Maximum 300 mg/kg

Source: SPFS (2007)

However, most producers only have marketing access through the village level traders where there is no price difference for low and high quality products. This condition provides no motivation for the producers to improve the product quality as they can still sell lower-quality sugar to the traders at the same price as high quality sugar. In the long term, this poor quality will give impact on the perception of consumers towards coconut sugar from Tempuling area (Susilo, 2008).

METHODOLOGY

From the literature review, it became apparent that there was a paucity of information regarding the coconut palm sugar industry in general and quality assessment of coconut sugar in particular. According to Chamhuri (2011), in the absence of any empirical literature, an initial qualitative research approach was considered to be the most appropriate means of addressing the research problems. The primary data was collected by interviews using questionnaires with coconut sugar producers/farmers, traders and industrial customers (food industries). The questionnaire was developed by the authors based on their previous research (Maharani et al., 2009). The questionnaire assessed the quality aspects of coconut sugar which were colour, texture, aroma, flavour, hygiene, weight, shape, shelf-life (durability) and packaging.

Research was conducted in the Tempuling sub-district, Indragiri Hilir District of Riau Province. The justification to choose this location is that this area is the centre of coconut sugar agro-industry in Riau Province. The research was conducted over one year starting from November 2009 to November 2010. In the Tempuling area, Tunas Jaya Village was chosen purposively as it is the area with the most producers (with the population of 154 producers from the total of 273 producers).

This research used a sampling frame of 32 producers (20% of the 154 producers). Sample was drawn from the population using snowball sampling. For traders and industrial consumers, the respondents were also gathered by snowball sampling with the producers as the starting point. The snowball sampling is most applicable in small population which is difficult to access (Wilson 2010). For this research, there was no data available regarding the contact for producers, traders and industrial customers for coconut sugar. There were 7 traders and 5 local traditional food industries interviewed.

FINDINGS

This section will describe quality description of coconut sugar based on the perceptions of the farmer-producers, traders and industrial customers or small scale traditional food industry (Table 2).

Table 2: Comparison of Coconut Sugar Quality Description

Quality Criteria	Producers	Traders	Industrial Consumers (food industry)	National Standard
Colour	pale colour yellowish brown (40%) reddish brown (38%)	reddish brown (60%)	dark reddish colour, dark brown or yellowish and reddish brown according to food product colour which is required	yellowish brown to brown
Aroma	typical and natural fragrance	natural distinctive aroma	natural distinctive aroma	naturally typical
Texture	tough and sandy / brittle, easy to cut	hard, dry and not mushy	brittle texture (sandy), easy to cut	normal solid condition
Taste/ flavour	typical and natural sweetness	natural sweet flavour	natural sweet taste	naturally typical
Weight	light weight / small portion	light weight	light weight (small to medium size)	unspecified
Shape	small cylindrical (not uniform in diameter)	smaller cylindrical	cylindrical	unspecified
Durability	2 months	2-6 months	2 months	unspecified
Packaging	clear plastic bag	clear plastic bag	clear plastic bag	unspecified
Hygiene	pay less attention to the hygiene of production	clean, not mixed with external non-food objects	clean, contaminant-free	unspecified

Quality Description of Coconut Sugar According to the Producers

In general, the coconut sugar produced in the Tempuling area by the different producers is quite homogenous. Quality of sugar produced is determined by several factors, among others are the quality of coconut sap, preservative (sodium metabisulphite and *resak* wood), technical capability and weather condition. According to the producers, the colour of the sugar they produce quite diverged, but most of the producers prefer pale coloured coconut sugar, which is yellowish brown (40%) or reddish brown (38%).

The colour of coconut sugar can be influenced by various factors such as preservatives and duration of cooking. Longer cooking time will also affect the colour of coconut sugar as it will result in black/darker coloured sugar. The more wood preservative used, the darker the colour of the sugar, while the addition of chemical preservatives (sodium metabisulphite) tends to produce coconut sugar with pale (yellowish) colour.

The producers in the Tempuling area often use excessive sodium metabisulphite powder to produce pale coconut sugar that they prefer. They probably get the result they intend to, but this preservative will reduce the natural fragrance of the sugar, causing a slightly bitter taste and shorter shelf-life as it will melt quickly. The other concern is the sulphite residue in the product which will probably be over the limit of SO_2 residue permitted by the national quality standard (cf. Table 1). This restriction is due to the possible health risks of sulphites. The sulphite sensitivities can manifest in symptoms as mild as a headache or as severe as breathing difficulty (McMilan, 2011).

In general, producers of coconut sugar have the opinion that good quality coconut sugar has tough and sandy texture. Tough texture will affect the shelf-life because it does not melt quickly while the sandy texture of coconut sugar leads to brittle texture and can be easily cut. Referring to the aroma and flavour, the producers consider typical and natural fragrance and sweetness of coconut sugar as the criteria of good quality sugar.

Hygiene is important in the production of coconut sugar. The sap-tapping container used must be clean to produce quality coconut sugar. The majority of producers mentioned that coconut sugar should be clean from any contamination. However, they are paying less attention to hygiene in the production process. Most of them do not clean the sap container regularly and do not filter the fresh sap so contaminants are often found in the coconut sugar produced.

In terms of weight, coconut sugar producers prefer smaller light weight sugar as the light weight makes it easy for packing and transportation. Based on the shape, the coconut sugar produced in the Tempuling area is cylindrical as the moulds used are made of bamboo. The producers think cylindrical sugar is a suitable shape as they are familiar with this shape. Dried bamboo moulds are heat resistant, non-sticky and it is easily available in nature.

The coconut sugar is usually stored in clear plastic bags to protect from open air exposure, as this exposure will cause melting of the sugar. Coconut sugar producers generally assume that good quality sugar will stay in a good condition for about two months. The use of plastic packaging is considered quite effective because it can protect the sugar from

the open air; it is easily available and relatively inexpensive. Good quality coconut sugar will have the shelf-life of about two months if properly packaged.

Quality Description of Coconut Sugar According to the Traders

The marketing agencies involved in the marketing of coconut sugar in Indragiri Hilir District are composed of village-level traders, large-scale traders, wholesalers and retailers. Each trader has a different description of good quality coconut sugar. In general, there are differences between traders' and producers' descriptions of the colour of good quality coconut sugar. The majority of traders (60%) prefer reddish brown colour whereas the majority of producers (40%) choose yellowish colour.

The term of quality for coconut sugar colour according to the Industrial Standard of Indonesia (SII) is yellowish brown to brown. At the village level, these differences are acceptable and do not affect the selling price of coconut sugar. This is because each customer has different colour criteria, such as wholesalers for export to Singapore who prefer pale colour coconut sugar while the wholesalers from Tanjung Pinang, Batam and Pekanbaru areas prefer reddish brown coconut sugar.

The texture of coconut sugar which is considered good by the traders is hard, dry and not mushy. This is consistent with the description of the quality of sugar palm by producers as well as other standards by Liptan (1993), which classified the hard palm sugar into superior quality. Referring to aroma and flavour, natural distinctive aroma and sweet flavour are preferred. Based on the requirements of SII, the aroma and taste of coconut sugar are naturally typical, because it is difficult to definitively describe the resulting aroma and taste of coconut sugar. The aroma and flavour of coconut sugar are distinctive so it is hard to be replaced by other types of sugars.

Cleanliness is a very important factor to consider at different levels of production, ranging from tapping the coconut sap to packaging and distribution. All traders require clean palm sugar which is free from various contaminants. However, one of the problems faced by the coconut sugar producers is low quality coconut sugar because it is mixed with external non-food objects. Actually the producers are aware that cleanliness is a good quality criterion for coconut sugar, but in fact, some producers were found to put intentionally some materials such as clay, beetles, coconut pulp, and wood chips into the coconut sugar to increase the weight of the products.

In terms of weight and size of coconut sugar, some traders prefer smaller size coconut sugar which is lightweight, as it has better texture. In fact, in the Tempuling area, the majority of the coconut sugar units produced is generally large and heavy. This is due to the producers' effort to put all the sugar cooked into larger bamboo moulds so as not to harden in the cooking wok before it is shaped. The bamboo moulds resulted in cylindrical shape which suits the preference of the traders and producers. In the SII standard, the required appearance is normal solid coconut sugar, but the shape is not specified.

The other factor considered is the smooth appearance (no white spots at the surface). The village level traders do not make any price differentiation between high and low quality

coconut sugar in terms of appearance. However, the wholesalers require visually appealing products without the white spots. If the coconut sugar has a blemished appearance, it will be separated and the price will be reduced by IDR 100 - 200 per kg.

The durability (shelf-life) of coconut sugar varies, according to the traders. Good quality coconut sugar can have a shelf-life of two to six months, which is also supported by effective packaging. According to the traders, the suitable packaging is clear plastic bags for ease of packaging, ability to be closed tightly and relatively cheaper price. The SII standard does not specify requirements for packaging.

Quality Description of Coconut Sugar According to the Industrial Customers (Food Industry)

For the downstream food industries that use coconut sugar as an ingredient for different varieties of traditional snack foods, colour is the most significant factor which will give impact on the end result of their food products. For example, the *Dodol* (sweet semi-solid traditional snack) industry prefers dark reddish colour to produce an attractive product. Meanwhile, sweet and sour peanut and ring-shaped cookie industries prefer yellowish and reddish brown as the most suitable colour for their snacks. For the sweet black cake industry, the coconut sugar preferred is dark brown to get the desirable colour for the cake.

The range of colours preferred by the food industries are red, yellow and brown. However, the coconut sugar producers are not aware of these as the majority of producers (40%) think that the best quality is yellowish/cream coloured coconut sugar while the majority of food industries (60%) preferred reddish coconut sugar. Both of these preferences are in accordance with the Industrial Standard of Indonesia (SII) which requires coconut sugar of yellowish brown to brown colours.

In terms of texture, almost all of the industries considered that brittle texture (sandy) coconut sugar, which is tough but easy to cut are the characteristics of good quality coconut sugar. These characteristics suit the description of the texture by the producers and traders as well as Liptan (1993), which classified the hard-texture coconut sugar as superior-grade sugar.

In terms of aroma, coconut sugar does have a distinctive aroma. This is in accordance with the opinion of industry owners who consider the natural distinctive aroma as the best aroma of coconut sugar. This also suits the description of the scent of coconut sugar by producers and traders. In relation to the aroma, taste is also important for the industries in selecting the coconut sugar. The natural sweet taste of coconut sugar is needed to enrich the flavour of the food products they produce, so the preferable coconut sugar should feature the natural sweet taste.

In terms of hygiene factor of coconut sugar, obviously the food industries require clean, contaminant-free coconut sugar. The industries also preferred small to medium size coconut sugar with light weight. However it is hard for the producers to meet these criteria as they need to quickly shape all the cooked sugar before its texture becomes hard. The industries accept the cylindrical shape of coconut sugar as the traders do. In

terms of packaging, a clear plastic bag is considered appropriate by the industries, similar to producers' and traders' perceptions. In terms of shelf-life, similar to the perceptions of producers and traders, downstream industries describe that good quality coconut sugar will last for about two months.

CONCLUSION

In general, there are similarities between the quality description of coconut sugar according to the producers, traders and industrial customers in the aspects of appearance, texture, aroma, taste, cleanliness, shape, shelf-life and product packaging.

The quality requirement of the Industrial Standard of Indonesia (SII) does not provide a detailed requirement for physical appearance of coconut sugar and these requirements can be fulfilled by the coconut sugar produced in the Tempuling area.

In terms of the colour criteria for coconut sugar, there are differences in colour which is considered to be good quality by producers, traders and industry. The majority of producers (40%) prefer a paler colour (yellowish). This does not match the colour criteria preferred by both the traders and food industries, as the majority of traders (60%) and food industries (60%) require reddish brown coconut sugar.

It is crucial to make the producers aware of the colour criteria preferred by traders and food industry. Today the producers use excessive sodium metabisulphite to produce light coloured coconut sugar. If the producers are aware that the consumers prefer darker colour, they can improve the quality by simply refraining from using the chemical preservatives, using safer alternatives such as natrium benzoate or by using sodium metabisulphite with caution.

The excessive use of sodium metabisulphite by producers indicates the need for further research on the chemical components of the coconut sugar produced in the Tempuling area to find out whether the products fulfil the national quality standard. Further research is also needed regarding quality perceptions of coconut palm sugar using a quantitative approach.

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THE INFLUENCE OF FOOD PRODUCT PACKAGING ATTRIBUTES IN PURCHASE DECISION: A STUDY AMONG CONSUMERS IN PENANG, MALAYSIA

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ABSTRACT

Packaging has become a vital means for differentiating items and attracting consumer attention. Packaging is now an important aspect in marketing and is treated as one of the most influential factors concerning consumer purchase decision at the point of purchase. Therefore, this study was conducted to investigate the effect of verbal and visual attributes on food packaging in consumer purchase decision. The data were collected using structured questionnaires from 181 respondents. The results of the analysis show that among all the packaging attributes, information concerning the packaging and the shape of the packaging has a significant impact on the purchase decision of processed food. Interestingly, attributes, such as graphics, colour, size and material, are not significant in influencing the purchase decision of processed packaged foods. The results of this study provide important insights to marketers and food manufacturers concerning the need to adopt an appropriate packaging strategy for processed foods in the Malaysian market.

Keywords: Packaging, purchase decision, consumer, food industry, Malaysia

INTRODUCTION

Among the many factors that influence consumer purchase decisions, product packaging has become a vital means for differentiating items and attracting consumer attention and encouraging them to purchase a particular product (Olga & Natalia, 2006; Vidales, 1995). Today, the advancement and technological development in the production and distribution of food products have led to a massive proliferation in the number and brands of food products available in the market. This may increase brand parity within a product category, meaning that when brands become similar and difficult to differentiate, consumers may face difficulty in selecting which brand to purchase. Therefore, food producers need to differentiate their products from their competitors.

Consumers often look at the packaging of the products as an aid in the purchase decision making process. Packaging refers to the container or wrapper that holds a product or group of products (Vidales, 1995). Apart from protecting the product from damage during

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storage and distribution, packaging is also an important sales tool in promoting the product to the ultimate consumer. Pilditch (1972) has defined packaging as the silent salesman in the store and it was the only communication medium between a product and the final consumer at the point of sales. Packaging is an ultimate selling proposition that stimulates impulse buying behaviour (Kuvykaite, Dovaliene, & Navickiene, 2009). A good packaging design is regarded as an essential part of successful business practice. Besides providing versatility, sustainability and convenience to consumers, most importantly, packaging enables marketers to better enhance the appeal of their products and attract consumers to the shelves (Rundh, 2005).

Marketers not only optimize the visibility of the packaging but also ensure that the packaging is able to communicate the specific benefits of the product and facilitate the consumers in product selection from among the variety of brands available on the market. Recently, there has also been an increasing trend of environmental concern in respect of packaging. Some governments have prohibited the use of harmful materials, and imposed requirements for packaging to be reduced, reused or recycled. In addition, various laws and regulations have been gazetted to protect the consumers from falsification and unsafe products. Perhaps the most influential class of laws that affect packaging is the one related to labelling, which requires the manufacturer or packer to declare on the packaged food the nutritional facts, added ingredients and best before date, etc. The reason for this requirement is to ensure that the product meets the stipulated quality standard, and, at the same time, provides necessary information on the packaging to facilitate consumer purchase decision.

Having discussed the importance of packaging and the latest requirements concerning packaging, it is pertinent to discuss consumer behaviour towards food packaging. Food that comes in packaged forms has become an essential component of the modern lifestyle. This is due to the greater demand for convenient, portable, easy-to-prepare meal solutions that lessen the hassles of grocery shopping and preparing a meal. Consumer behaviour towards food packaging indicates certain trends in recent years. Consumers are now taking care to read the nutrition labels and seeking out products with health benefits. In the context of food product packaging in Malaysia, this sector has undergone a slower growth since the economic downturn in 2008. Consumers cut down on indulgence products, such as crisps, confectionery and ice-cream, in a bid to tighten their belts (Euromonitor, 2011). In addition, various food scandals (e.g., the melamine scare in dairy products and the detection of harmful toxic chemicals and adulterants in food products) have further aggravated the packaged food industry.

Although the Malaysian market condition is getting better, there is a need to study the importance of factors affecting the sales of packaged food products. Therefore, the aim of this study is to examine the significant attributes of packaging that influence consumer purchase decisions. The results will guide managers to adopt an effective and appropriate packaging strategy for processed foods, which, ultimately, will help to improve brand recognition and sales of the processed food products.

LITERATURE REVIEW

Packaging is one of the critical factors in the decision making process as it communicates to the consumers (Estiri, Hasangholipour, Yazdani, Nejad, & Rayej, 2010). Decision making is regarded as the continuous cognitive processes in the selection of a course of action among several alternatives in the environment to making final a choice (Lysonski, Durvasula, & Zotos, 1996). In decision making theory, intention to purchase depends on the degree to which consumers expect the product to satisfy their need and desire when they consume it (Kupiec & Revell, 2001). In the pre-purchase decision making process, consumers consider factors such as the product itself, the packaging, the store and the purchase method (William, 1994). In this study emphasis will be given on packaging elements.

In general terms, packaging is the container to hold, protect, preserve and facilitate the handling and commercialization of products. Different researchers emphasized different functions of packaging and some of their studies relate either to logistic or marketing functions (Prendergast & Pitt, 1996). According to Rundh (2005), changes of consumption patterns and habits have resulted in higher demand for innovative packaging solutions in retail outlets. In addition to the logistic function, packaging now has a major role in marketing and is treated as one of the most important factors influencing consumer purchase decision at the point of sale (Kuvykaite et al., 2009). Analysis of the findings from Wells, Farley and Armstrong (2007) clearly indicates that there is a strong association regarding the influence of packaging on purchase decision, with over 73 per cent of consumers interviewed stating that they rely on packaging to aid their decision-making process at the point of purchase.

Packaging and its Attributes

There are many different schemes for the classification of packaging attributes shown in the previous research (Kuvykaite et al., 2009). For example, graphics, colour, form, size and material were analysed as the main visual elements, while product information, producer, country-of-origin and brand were treated as the main verbal elements of packaging by Kuvykaite et al. (2009) to reveal the impact of visual and verbal packaging elements on consumer purchase decisions. According to Smith and Taylor (2004), the six attributes that must be taken into consideration by marketers in creating effective packaging include graphics, colour, size, form, material and flavour. Whereas Rettie and Brewer (2000) divided packaging attributes into verbal (brand slogans) and visual (visual appeal and picture) attributes.

However, according to Silayoi and Speece (2004, 2007), there are four main packaging attributes that can potentially affect consumer purchase decisions, which can be separated into two categories: visual and informational attributes. The visual attributes are graphics and size or shape of packaging, and relate more to the affective side of decision-making. Informational attributes relate to information provided and technologies used in the package, and are more likely to address the cognitive side of decision-making.

Marketing depends heavily on the capacity of packaging to communicate visually to inform and persuade consumers both at the point of purchase and at the point of consumption (McNeal & Ji, 2003). To a great extent, visual attributes of the packaging influence the choice of the product (Silayoi & Speece, 2004). Shoppers who are restricted with their shopping time rely heavily on extrinsic attributes in making purchase decisions, especially visual information (Wells et al., 2007). Basically, there are five visual packaging attributes that will be taken into consideration in this study – graphics, colour, shape, size and packaging material, as per Kuvykaite et al. (2009). According to Underwood, Klein, & Burke (2001), consumers are prone to imagine the tastes, feels, or smells of a product while they are looking at the graphics on the packaging.

Visual Attributes – Graphics

Silayoi and Speece (2004) stated that, to a great extent, the aspects relating to the graphics of the packaging influence the choice of product. A vivid picture on the packaging generates consumer attention by breaking through the competitive clutter (Silayoi & Speece, 2004). Over 43 per cent of consumers claim to use the pack photography as an indication of product quality (Wells et al., 2007). The results from Vila and Ampuero (2006) give rise to the conclusion that with respect to packaging images, safe guaranteed products and upper class products are associated with pictures showing the product. Therefore, a graphic attribute that attracts consumers at the point of sale will help them make purchase decisions quickly. From the discussion above it is possible to put forward the following hypothesis:

H_{1a}: The packaging graphics have a positive influence on the purchase decision of packaged food.

Visual Attributes – Colour

A product's colour may play an important role in consumer purchase decisions (Grossman & Wisenblit, 1999), and colour was among the most highly noticeable factors contributing to a positive shopping experience (Silayoi & Speece, 2004). Martindale and Moore (1998) claimed that consumers may prefer certain colours over others for various product category choices. Colour can also be used to differentiate a product, build its own associations and help consumers locate the product on the shelf (Grossman & Wisenblit, 1999). In addition, consumers are believed to have colour preferences for various product categories based on their own cultural associations (Grossman & Wisenblit, 1999). Understanding consumer views on how the colour attribute plays a role in their purchase decision is critical for food companies competing globally. Therefore, hypothesis H1b is postulated as follows:

H_{1b}: The packaging colour has a positive influence on the purchase decision of packaged food.

Visual Attributes – Shape

Packaging shape has some influence on consumer purchase decisions (Silayoi & Speece, 2004). A unique shape can be a very powerful weapon in differentiating a brand and/

or conveying fun (Young, 2003). Innovation in packaging shape could help to make products more appealing and distinguish them from their competitors. Changing the shape of product packaging can play an important role in product differentiation (Sherwood, 1999) and bring in significant profits at the sales register (Prince, 1994). An unusual container more successfully competes for the viewer's attention than the norm (Silayoi & Speece, 2004). According to Silayoi and Speece (2004), distinctive packaging shapes are considered more attractive for children's products. It has been reported that children preferred to try products in different packaging shapes. The packaging shape can be a key element of a package that contributes to the emotional experience. As packaging shape has been found to be positively significant in predicting purchase behaviour, Wansink (1996) claimed that the shape of the packaging is an essential factor for success in the marketplace for various products. As a result of these previous findings, the following hypothesis is suggested:

H_{1c}: The packaging shape has a positive influence on the purchase decision of packaged food.

Visual Attributes – Size

Packaging size is one of the main visual attributes when making a purchase decision (Kuvykaite et al., 2009). The packaging size is related to usability, as consumers appear to use this visual criterion as a heuristic that helps to make volume judgments (Silayoi & Speece, 2004). Consumers use the height of the container or its elongation to simplify volume judgments (Raghubir & Krishna, 1999). A bigger package reflects better value but consumers from smaller households are not interested in larger packages (Silayoi & Speece, 2004). The larger packaging size is more easily noticed and communicates higher value according to Silayoi & Speece (2004). Research has shown that many products need to be sold in different package sizes due to the market demand for flexibility (Rundh, 2005). Therefore, due to the importance of packaging size the following hypothesis is suggested:

H_{1d}: The packaging size has a positive influence on the purchase decision of packaged food.

Visual Attributes – Packaging Material

Packaging material is one of the main visual attributes when making a purchase decision (Kuvykaite et al., 2009; Silayoi & Speece, 2004, 2007). Research indicates that consumers expect all packaging to be environmentally friendly (Prendergast & Pitt, 1996). Consumers demand more environmentally friendly packaging or packaging that is recycled and reused more easily (Rundh, 2005). In addition, some housewives have indicated that snack food packages need to be made with nontoxic materials, as well as be soft and harmless when kids try to open them themselves (Silayoi & Speece, 2004, 2007). In terms of convenience, customers demand packaging that offers easy shopability, openability, reclosability, portability and disposability (Ahmed, Ahmed, & Salman, 2005). Combinations of different materials can encourage people to touch the package and thereby be inspired to try the actual product (Rundh, 2009). Since most of the literature is

consistent in suggesting a positive relationship between packaging material and purchase, the following hypothesis is suggested:

H_{1e}: The packaging material has a positive influence on the purchase decision of packaged food.

Verbal Attributes – Information on the Package

Packaging as the primary vehicle for communication with the consumer provides details about the product at the point of sales including the nutritional value, added ingredients, country of origin, the producer and best before date. Informational elements of the package play a vital role in decision-making (Silayoi & Speece, 2004, 2007; Kuvykaite et al., 2009). Appropriately delivered information on the packaging has a strong impact on consumer purchase decisions, as this information reduces uncertainty and creates product credibility (Silayoi & Speece, 2004). Consumers are becoming more careful shoppers, and have been found to be paying more attention to label information as well as using the packaging information more extensively, as they are more health and nutrition conscious (Coulson, 2000). The packaging may be the only communication between a product and the consumer in the store (Gonzalez, Thorhsbury, & Twede, 2007) and is the critical factor in consumer purchase decisions (Butkeviciene, Stravinskiene, & Rutelione, 2008).

The previous literature has found that the place of origin was one of the pieces of information on the package that had a significant influence on purchase behaviour (Ahmed et al., 2005; Kuvykaite et al., 2009; Piron, 2000). In addition, according to Kuvykaite et al. (2009), indicating the producer and brand on the product label could not be underestimated. Thus, the following hypothesis is generated:

H_{2a}: The information on the package has a positive influence on the purchase decision of packaged food.

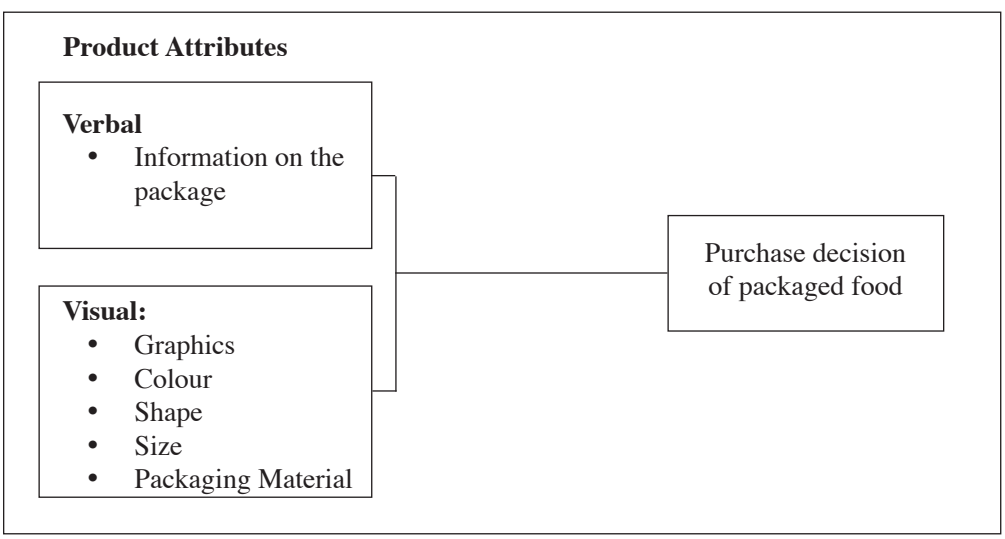

Figure 1: Research Model for the Study

METHODOLOGY

The questionnaire used consists of two different sections. The first section consists of statements on the visual and verbal package attributes that have a decisive effect upon consumer purchase decisions. It comprises 26 questions that are used to measure the constructs of this study. The constructs were measured using a five-point Likert scale, with 1 representing strongly disagree and 5 representing strongly agree which were adapted from the previous study. The items for visual package attributes were adapted from Vila and Ampuero (2006); Silayoi and Speece (2007); Yang and Raghubir (2005); and Ahmed et al. (2005). For the verbal package attributes the items were adapted from Silayoi and Speece (2004), and Kuvykaite et al. (2009). Finally, the items for purchase decision were adapted from Schlegelmilch, Bohlen and Diamantopoulos (1996). A pilot study was conducted to pre-test the questionnaire on 25 academic respondents. Their feedback was considered to improve the questionnaire before distributing to the actual sample.

Data were collected using the convenience sampling method. A total of 250 self-administered questionnaires were distributed to consumers in shopping areas in Penang. The respondents were asked to indicate their level of agreement or disagreement with a series of statements based on a five-point Likert scale, ranging from one (strongly disagree) to five (strongly agree). The unit of analysis involved individual consumers. The collected questionnaires were analysed using SPSS version 17.

RESULTS AND DISCUSSION

Although a total of 250 questionnaires were distributed, only 200 questionnaires were returned at the end of the data collection process, which gave the response rate of 66.7 per cent. However, during the data cleaning only 181 were usable and used for the subsequent statistical analysis. The demographic profile of the respondents is shown in Table 1. Out of the 181 respondents, 51.9 per cent are female and 48.1 per cent are male. The age ranges of the respondents are: below 26 (30.4%), 26-35 (42.5%), 36-45 (19.5%), 46-55 (5.5%), and above 55 (2.2%). Only 47.5 per cent of the respondents are single while 49.7.0 per cent are married and the balance 2.8 per cent are divorced or widowed. Chinese consumers make up 49.7 per cent, followed by Malay (33.7%) and the remaining 16.6 per cent are Indians. With respect to education background, the majority of the respondents are bachelor-degree holders (58.0%), 22.1 per cent diploma holders or certificate holders, 14.4 per cent with high school education, and 5.5 per cent possess postgraduate degrees.

Table 1: Profile of Respondents

Item	Description	Frequency	%
Gender	Male	94	51.9
	Female	87	48.1
Age (Years)	Below 26	55	30.4
	26-35	77	42.5
	36-45	35	19.5
	46-55	10	5.5
	Above 55	4	2.2
Marital Status	Single	86	47.5
	Married	90	49.7
	Divorced	4	2.2
	Widowed	1	0.6
Race	Malay	61	33.7
	Chinese	90	49.7
	Indian	30	16.6
Highest Education Level	High School	26	14.4
	Certificate/	40	22.1
	Diploma	105	58.0
	Bachelors	8	4.4
	Degree	2	1.1
	Master Degree		
	PhD/Doctorate		

Reliability analysis and factor analysis were conducted prior to the regression analysis in order to identify the appropriate items for the analysis. The consistency reliability and the value of Cronbach's alpha will determine the variables' reliability and measure the consistency of a multiple item scale (Sekaran, 2003). On the other hand, the Principal Component Analysis (PCA) was conducted to establish their suitability for use in subsequent multivariate analyses (Hair, Anderson, Tatham, & Black, 1998). Table 2 shows the summary of the reliability analysis and factor loadings for all the measurement items used in multiple regression analysis.

Table 2: Summary of Factor Loading and Reliability for the Measurement Items

Variables	Cronbach Alpha	Factor Loading
Graphics	0.658	
Appealing graphics		.780
Photographs image		.743
Illustrations image		.776
Images of people		.713
Colour	0.874	
Colourful		.854
Light colour		.864
Warm colour		.870
Cold colour		.783

Table 2 (continued)

Variables	Cronbach Alpha	Factor Loading
Shape	0.760	
Unique shape		.853
Fancy shape		.869
More elongated		.784
Straight shape		.610
Size	0.612	
Visually larger		.859
Multiple pack size		.717
Larger refill packs		.726
Fits to my hand		.600
Packaging Material	0.638	
Environmentally		.691
High quality		.728
Easy to open		.753
Quick meal pack		.588
Information on the Package	0.782	
Labelling		.779
Nutrition information		.513
Quality of information		.756
Country of origin		.669
Manufacturer information		.806
Purchase decision	0.691	
Buy packaged food		.90
Consume various packaged food		.89

The Cronbach's alpha reliability coefficients of the items were all above 0.6. According to Sekaran (2003), alpha coefficients less than 0.6 are poor, those in the 0.7 range are considered acceptable in most social science research situations, and those over 0.8 are good. The factor loadings are also at acceptable level as they are all above 0.5 (Hair et al., 1998).

Multiple regression analysis was performed to determine the relationship between packaging attributes and the purchase decision of packaged food. Multiple linear regression is a commonly used statistical technique in the behavioural sciences (Hankins, French, & Horne, 2000). In order to do the regression analysis, the items for independent variables and the dependent variables were aggregated by combining all items under one particular heading or label. This approach has been widely employed in survey based research in behavioural sciences research (see Amin & Ramayah, 2010; Lianxi, Zhiyong, & Hui, 2010; Suki, 2011). After the data were aggregated, the multiple regression analysis was conducted to reveal how food packaging attributes influence the purchase decision. The packaging attributes include the packaging graphics, colour, shape, size, material and information on the package while the purchase decision constitutes the dependent variable. The results are shown in Table 3.

Table 3: Results of Multiple Regression Analysis

Multiple Regression Analysis Variable	Standardized β	t-value	*p*-value
Graphics	.0137	1.383	.168
Colour	-.099	-.964	.612
Shape	.316	3.562	.001**
Size	-.014	-.163	.870
Packaging Material	.062	.808	.420
Information on the package	.155	2.117	.036*
F-value		123.80**	
R		.404	
R square		0.163	
Adjusted R square		0.134	

Note: $N = 181$; $^{*}p < .05$, $^{**}p < .01$

The R^2 value, 0.163 showed that graphics, colour, shape, size, packaging material and information on the package predicted approximately only 16.3 per cent of the variations in consumer purchase decisions for packaged food. The *F* value was significant at 0.01; therefore, the goodness of the model was supported. Further examination of the results showed that packaging shape ($\beta = 0.316$) was positively related to consumer purchase decisions for packaged food at significant level $p < 0.01$ while information on the package ($\beta = 0.155$) showed a significant positive relationship with consumer purchase decisions at $p < 0.05$. Hence, there was enough evidence to support Hypotheses H_{1c} and H_{2a}. However, there were no significant relationships between packaging graphics, colour of the packaging, size of the packaging and the packaging material in the purchase decision of the packaged food. Therefore, hypotheses H_{1a}, H_{1b}, H_{1d} and H_{1e} are rejected. Thus, it is conclusive that graphics, colour, size and packaging material of packaged food are not the determinants of purchase decision among the respondents. A summary of all the results for the hypothesis testing is shown in Table 4.

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Table 4: Summary of Hypothesis Testing Results

Hypothesis	Supported/ Not Supported Hypothesis
H_{1a}: The **packaging graphics** have a positive influence on the purchase decision of packaged food.	Not Supported
H_{1b}: The **packaging colour** has a positive influence on the purchase decision of packaged food.	Not Supported
H_{1c}: The **packaging shape** has a positive influence on the purchase decision of packaged food.	Supported
H_{1d}: The **packaging size** has a positive influence on the purchase decision of packaged food.	Not Supported
H_{1e}: The **packaging material** has a positive influence on the purchase decision of packaged food.	Not Supported
H_{2a}: The **information on the package** has a positive influence on the purchase decision of packaged food.	Supported

The results indicate that packaging shape and information on the package are the only two factors that influenced the purchase of packaged food. Under the visual attribute, shape of the package (such as uniqueness, fanciness, elongated and straightness of shapes) is found to be the significant predictor in consumer purchase decisions for packaged food. This is in line with a previous study (Silayoi & Speece, 2007), which indicated that packaging shapes could make a product more appealing and that distinctive packaging shapes are considered more attractive as they are funny and fascinating. The findings also align consistently with the studies from Prendergast and Pitt (1996) and Young (2003) who pointed out that a unique packaging shape can be a very powerful weapon in differentiating a brand and conveying fun. If all sales packages were of a standard size, consumers would become frustrated without the numerous clues provided by the distinctive shapes of sales packaging. A unique packaging shape can create contrast and make the product stand out on the shelf and attract consumers' attention. In addition, the research findings also support the view of Silayoi and Speece (2007) in that the packaging shape also helped consumers to judge product volume and value for money. The consumers are more likely to purchase more elongated (stretched) packed food products as they think of the package as being better value for money, which, generally, results in larger sales.

The findings also indicate that for verbal attribute the information on the package (such as labelling, nutrition, quality of the information, country of origin and manufacturer information) is the significant predictor in influencing the purchase decision of packaged food. The findings are in line with previous studies which also found that information on the package is a significant determinant when making purchase decisions (Prendergast & Pitt, 1996; Rettie & Brewer, 2000; Silayoi & Speece, 2007; Gonzalez et al., 2007; Butkeviciene et al., 2008). Consumers often rely on the information on the package when making their purchase decision. They tend to read the message on the label more often to ensure quality, even though graphics, colour, size or shape may affect their attention at the beginning. The information on the package that has a significant impact on the purchase decision includes the nutritional information, country of origin and manufacturer information on the packaged food item.

The competition in the market for packaged food products has become very intensive. The main implication for food manufacturers and marketers is that food packaging is a vital instrument in modern marketing activities, especially in the competitive food industry. Packaging is believed to be specifically related to the strategic decisions of the marketing mix and import element in the positioning decision. In order for packaging to suitably develop its functions, factors such as visual and verbal attributes need to be emphasized. Although in literature, structural shape, graphic design, colour, optimum size of the pack, material used and information are all identified as significant elements, each element has different influences in consumer decision making.

Food manufacturers and marketers must understand consumer response to their packages, and integrate the inputs into designing the best packaging style. This study highlights that among all the packaging attributes, information on the packaging and the shapes of the packaging have significant impact on purchase decisions of processed food products. This has important implications to the managers in the packaging decision of their products. This also signifies to the managers that they have to focus more on the interior elements

of the products rather than the exterior features of the products such as graphics, colour and size of the packaging.

Managers should focus and improve on their packaging design to suit Malaysian consumers. Strengthening and incorporating these two elements will give the food practitioners advantage in improving their packaging design and positioning strategies in generating attention by breaking through the competitive clutter in the store or at the supermarket. Improving the quality of information is an important element since increasing consciousness of consumers nowadays who are more aware of the importance of knowing the contents or materials that make up the products. The reported cases of food scandals have dampened the confidence of consumers on the global processed food products market. Hence, consumers are becoming more vigilant and cautious in selecting food products. Thus, one way of doing this is to 'read' the contents on the packaging carefully. Designing a distinctive, unique and innovative shape of packaging will help the product to stand out from competitors and catch the consumer's attention which will contribute to brand image and recognition. Therefore, for food manufacturers or marketers, more budget and effort should be allocated to provide more detailed information on the label and to generate new innovations for the shape of the packaging to suit the new generation's lifestyle.

CONCLUSION

This study attempts to reveal the visual and verbal packaging attributes that are most significant in influencing consumer purchase decisions concerning packaged food. This study contributes to the literature for future research. The research findings provide a better understanding of packaging attributes and their impact on consumer's purchase behaviour in packaged food products. The findings indicate that packaging shape and information on the package are two attributes that influence consumer purchase decisions. For the practitioners, this study contributes important knowledge to improve their strategic decisions for a suitable packaging style and adopting a more effective and appropriate packaging strategy to increase brand recognition and sales of their food products in the market. However, this study only focuses on one category of product, i.e., food product. Consequently, the results may not be generalised to non-food items. Future studies could extend this research by considering the importance of packaging attributes on other product categories, or additionally, employing a comparative study to possibly identify the different effects of packaging attributes on a variety of types of products.

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FACTORS INFLUENCING FRUITS AND VEGETABLES CONSUMPTION BEHAVIOUR AMONG ADULTS IN MALAYSIA

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ABSTRACT

Numerous studies have been carried out on fruits and vegetables consumption and factors that influenced consumers' fruits and vegetables intake. However, there is limited knowledge on factors that influence fruits and vegetables consumption in Malaysia. Hence, it is important to determine factors that increase the consumption of fruits and vegetables. Therefore, the aims of this research were to evaluate the personal and environmental factors on fruits and vegetables consumption behaviour among adults in Malaysia. Social Cognitive Theory (SCT) supports this study. A total of 1200 respondents were selected in seven cities in Malaysia. Data were analysed by using multiple linear regressions, independent sample t-test and one-way ANOVA to address the research objective. Descriptive analysis was employed to profile the respondents. Based on the findings, attitude (p=.001), habit (p=.002), social influences (p=.001) and availability (p=.001) were found important towards fruits and vegetables consumption behaviour. Females were found to have higher interests than their counterparts in all those factors measured in this study. It indicates that women are more health conscious than men. Age and marital status were significant factors in fruits consumption behaviour whereas age, race, marital status and household income were found to have significant influences in vegetables consumption behaviour. In conclusion, the empirical and theoretical implications of this study can be recommended to marketers and stakeholders.

Keywords: Fruits, vegetables, consumption behaviour, adults, Malaysia

INTRODUCTION

Previous studies have confirmed that consumption of fruits and vegetables contributes to better health and can help to prevent the risks of critical chronic diseases such as heart disease, diabetes, cancer and hypertension (Hu, 2003; Key et al., 2002; Joshipura et al., 1999). These findings help to set the dietary recommendations in many countries. The US

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Dietary Guidelines and the Food Guide Pyramid recommend eating five or more servings of fruits and vegetables per day (USDA, 2010). In Malaysia, the recommended intake of fruits and vegetables is five servings (approximately 400 g) which are two servings for fruits and three servings for vegetables per day (Ministry of Health Malaysia, 2010). In the United Kingdom, only 25 per cent of men and 29 per cent of women adults consumed five or more portions of fruits and vegetables per day (HSCIC, 2009). Data from the US Department of Health and Human Services stated that 32.5 per cent of American adults consumed more than two portions of fruits per day and 26.3 per cent consumed more than three portions of vegetables per day. Overall, the proportion of adults who met the fruit target declined slightly from 34.4 per cent in 2000 to 32.5 per cent in 2009.

However, many developing nations, including Malaysia, fail to increase the fruits and vegetables consumption in their population (Justin, Spencer, Sam, & John, 2009). Results from the Malaysian Adult Nutrition Survey (Norimah et al., 2008), revealed that consumption of fruits is still low among Malaysians and is not included in the top ten daily consumed foods among Malaysian adults. This is a critical issue that needs to be investigated because it will help to prevent undesirable health conditions in the society. Identifying dietary behaviour factors and changes have been identified as a priority area for future behavioural research in dietary changes particularly those that focused on personal factors (e.g. attitude, habit), environmental factors (e.g. social influences, availability), and socio demographic factors related to fruits and vegetables consumption (Joanne, Jessie, & Joseph, 2007; Krebs et al., 1996; van Duyn & Pivonka, 2000). In Malaysia, there is a lack of research on the factors affecting consumption of fruits and vegetables. However, previous researches conducted to measure the socio-demographic factors among Malaysians by Steven, Andrew and Rodolfo (2011) indicates that education, age, ethnicity, income, location of residence, smoking status and health condition were significant predictors of fruits and vegetables consumption. The data were in line with previous findings from the United States Department of Agriculture, that the major factors affecting fruits and vegetables consumption were income, age and education (Lin, 2004). Therefore, in order to identify the factors influencing fruits and vegetables consumption, this research seeks to evaluate the personal and environmental factors among Malaysian adults related to their fruits and vegetables consumption behaviour.

LITERATURE REVIEW

One major goal of health promotion has been created by identifying efficient methods to the advanced lifestyles through behavioural change. In other words, consumer behaviour involves the thoughts and feelings people experience and the actions they perform in the consumption process. It also includes all the things in the environment that influence these thoughts, feelings and actions (Peter & Olson, 2008). In addition, consumer behaviour is a subset of human behaviour.

Several past studies were conducted on adults' consumption of fruits and vegetables (Baker & Wardle, 2003; Lin, 2004; Carljin et al., 2006; Dehghan, Akhtar, & Merchant, 2011; Manuel, Petra, & Ibrahim, 2009; Tamers, Collins, Dodd, & Nebeling, 2009; Vermeir & Verbeke, 2008). Children's eating habits will be continued to adult stage, making the

adulthood stage as the target population to be investigated (Mikkila, Rasanen, Raitakari, Pietinen, & Viikari, 2005). Besides that, adults are highly aware of their consumption choices and are better known as independent customers who know their needs very well (Belk, Bahn, & Mayer, 1982).

Personal and environmental factors are the main attributes to identify the consumption behaviour among consumers. Sallis and Owen (2002) defined environmental factors as all factors external to the individual and this refers to the impact of an individual's external environment, such as family, friends and availability. Personal factors are the internal factors that direct behaviours including personal expectations, beliefs, self-perceptions, goals and intention. In this study, attitude and habit are categorized under personal factors while availability and social influences are categorized under environmental factors. Peter and Olson (2008) summarized attitude as a person's overall evaluation of a concept that evaluations can be created by both the affective and cognitive systems. These responses are generated without conscious, cognitive processing of information about the product. Therefore, through a classical conditioning process, these evaluations may become associated with a product or a brand to create an attitude towards a product. Cox, Anderson, Lean and Mela (1998) reported that attitude is strongly associated with fruits and vegetables consumption.

Habit will be developed when behaviour is being repeated and practised (Bargh, 1994). It comes in a natural way in our life without awareness. Hence, it acts in a specific way under detailed circumstances (Verplanken & Faes, 1999). Furthermore, eating behaviours and habits established during childhood are likely to persist into adulthood.

Kathleen, Connie, Leslie and Frank (2009) found that when more food items are available, the amount of consumption will increase. Availability is a major influence to consumption of fruits and vegetables. Availability of fruits and vegetables at the workplace and canteen plays an important role.

Social influences refer to influences that one or more subjects have on eating behaviours of others. In addition, even when eating alone, food choice is influenced by social influences because attitudes and habits develop throughout contacts with other people (Story, Sztainer, & French, 2002). Research clearly states that a social facilitation leads to lower level food consumption when eating alone and higher level consumption when eating with a group, especially if the group composed of familiar persons (Castro, 2004). Family and friends provide a source of peer pressure for consuming foods and for trying new foods.

Steven and Andrew (2012) have examined the daily consumption of fruits and vegetables in Malaysia focusing on socio-demographic factors by using logistic regression. Their findings stated that working hours, education, age, ethnicity, income, gender, smoking status and location of residence have significant correlations with fruit consumption. However, income, gender, health condition and location of residence were found significant in the consumption of vegetables. These findings were supported by previous studies that show significant differences in socio-demographic attributes towards consumption of fruits and vegetables (Ball, Crawford, & Mishra, 2006; Havas et al., 1998; Subar et al., 1995; Thompson, Margetts, Speller, & McVey, 1999).

METHODOLOGY

This exploratory study by using self-administered questionnaires was distributed in seven selected cities in Malaysia from December 2011 to February 2012. The states were Selangor, Johor, Sabah, Sarawak, Perak, Kedah and Kelantan. All these states were the most populated areas in Malaysia. In each state, the most populated city was selected as the sampling frame of this study. The selected cities were Subang Jaya (Selangor), Johor Bahru (Johor), Kota Kinabalu (Sabah), Kuching (Sarawak), Ipoh (Perak), Alor Star (Kedah), and Kota Bahru (Kelantan). Based on a purposive sampling technique, the most crowded and the most visited shopping centre of each city was chosen. Frank Small & Association found that Malaysian adults (above eighteen years old) spent most of their leisure time in shopping centres or mall (Zafar, Morry & Zainurin, 2007). The study states that a shopping centre is also a community centre for social and recreational activity among Malaysian adults. Therefore, the main reason for choosing the shopping mall was to obtain an adequate number of respondents. An ideal sampling frame for the respondents is a complete listing of all members of the target population but it was impossible to develop a sampling frame since there was no way to know the exact number and personal details of the adults visiting the malls; hence, respondents were chosen by using convenience sampling. Even though this method would hardly lead to representative samples, it may be the best method available due to the unavailability of an accurate sampling frame (Trochim, 2006). Malaysian adults, with age ranging from 19 to 59 years old, were chosen and voluntarily participated in this research to identify the various variables contributing to the consumption of fruits and vegetables.

Data were analysed by using SPSS software (version 19). Multiple linear regressions, independent sample t-test and one-way ANOVA were conducted to answer the objective of this research.

Figure 1 denotes the conceptual framework of this study. The framework was modified from Social Cognitive Theory (SCT) developed by Bandura (1997). This theory explained the reciprocal effects between personal, environmental and behavioural factors or understanding consumer behaviour. The factors measured in this study can be supported by SCT. Thus, the framework of this study is based on this theory and the intention to consume fruits and vegetables was explained by the effects of personal factors (attitude and habit) and environmental factors (social influences and availability).

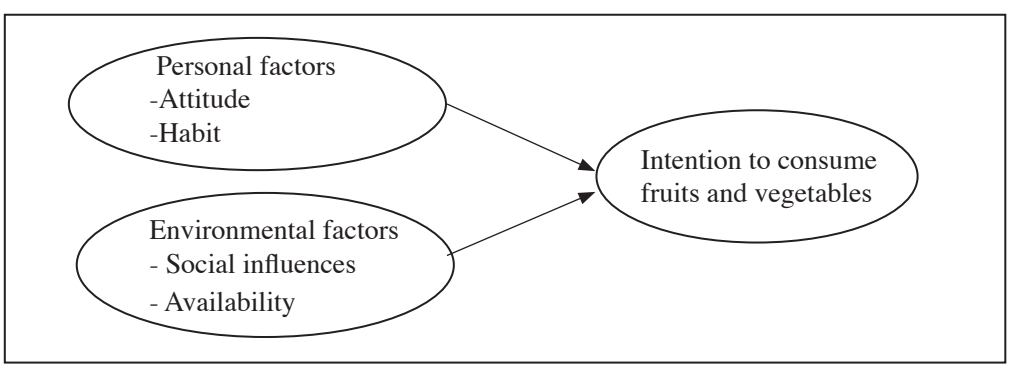

Figure 1: Conceptual Framework of the Study

The questionnaire consisted of four sections. The first section measured the personal factors, which consisted of attitudes and habits, which were measured by 12 items by using a seven point Likert scale (1=strongly disagree to 7=strongly agree). The questions were adopted from previous researches (Ahlstrom, 2009; Engelhaupt, 2006; Lai, 2007; Richards, 2004; Richards, 2007; Stables, 2001). The second section of the questionnaire measured environmental factors, which consisted of availability and social influences, which were measured by six items. The items were adopted from previous studies (Ahlstrom, 2009; Engelhaupt, 2006; Lai, 2007; Richards, 2004; Richards, 2007; Stables, 2001). The third section measured the intention to consume fruits and vegetables (consumption behaviour) as the dependent variable in this study with four items by using a seven point Likert scale. The last part asked about the socio-demographics of respondents. The reliability of the factors measuring fruits and vegetables consumption ranged between 0.700 and 0.784. The higher the score, the more reliable the generated scale is. Nunnally (1978) indicated that 0.7 is the cut-off value to be acceptable in social sciences. Therefore, all variables were reliable and included for further analysis.

RESULTS AND DISCUSSION

The relation of different attributes towards dependent variables (intention to consume) was examined by comparing the magnitude of regression coefficients. Among the total of 1200 collected questionnaires, 151 were excluded from the final analysis because they were not fully completed. As a result, 1049 questionnaires were useable (87.41%) and used for consequent analysis.

The results indicated that the number of female respondents were higher than males. Out of 638 respondents, (60.8%) were female and 408 (38.9%) were male. Most of the respondents were Malays, i.e., totalling 777 (74.1%), followed by other ethnics, 125 (11.9%), while 95 were Chinese (9.1%) and 47 were Indians (4.5%). Since ethnicity was not the major issue in this research, the proportion of respondents based on different ethnicity was not important. From the results, 617 (58.8%) were single, 419 (39.9%) were married and 10 (1%) were divorced. Respondents were asked about their educational backgrounds and the results showed that the percentage of participants with secondary school level (consisting of 35.2% of the total) was higher compared with other educational levels. Besides, most of the participants' household monthly income (i.e., 38.9% of the total) was in the range of RM1001 to RM3000.

Table 1 shows the effects of factors on intention to consume fruits among Malaysian adults.

Table 1: Regression of Factors towards Intention to Consume Fruits

Model	Standardized Coefficient		Unstandardized Coefficient	t	p
	Beta	Std.Error	Beta		
Constant	2.205	0.183		12.041	.001
Attitude	0.192	0.038	0.155	5.034	.001
Habit	0.065	0.029	0.073	2.240	.025
Social influences	0.210	0.023	0.270	9.087	.001
Availability	0.217	0.023	0.272	9.407	.001

F = 39.286 $R^2 = 0.348$
Sig-F 0.001

The R Square (coefficient of determination) was 0.348, which means that 34.8% of the total variance in the dependent variable could be explained by these four items. The F-ratio of 139.286 ($p \leq 0.05$) shows the model was significant. The final regression equation model was measured as follows:

Y = 2.205 + 0.192 Attitude + 0.065 Habit + 0.210 Social Environment
+ 0.217 Availability ... (1)

Where,
Y = Intention to consume fruits
Attitude = Attitude towards eating fruits
Habit = Habit of eating fruits
Social Influence = Influence from social influences while eating fruits
Availability = Availability of fruits at home and nearby areas

The value of Beta in the column determined the relationship between intention to consume fruits and independent variables of this study. The values for attitudes, habits, social influences and availability indicated that there were positive relationships between dependent variables of the study and the independent variables. These values indicate to what extent each independent variable affects the dependent variable. The regression equation for four attributes was significantly related to intention of consuming fruits. Attitudes towards eating fruits ($\beta = 0.155$), habits of eating fruits ($\beta = 0.073$), influences from family members and friends ($\beta = 0.270$) and availability of fruits ($\beta = 0.272$) indicate all these variables had significant effects on intention to consume. Therefore, this study suggests that all these factors had important effects on the intention to consume fruits, and among the variables, availability had the highest effect on fruits consumption.

Table 2 shows the effects of factors on intention to consume vegetables among Malaysian adults.

Table 2: Regression of Factors towards Intention to Consume Vegetables

Model	Standardized Coefficient		Unstandardized Coefficient	t	p
	Beta	Std.Error	Beta		
Constant	1.794	0.162		11.106	.001
Attitude	0.225	0.038	0.190	5.899	.001
Habit	0.095	0.030	0.107	3.139	.002
Social influences	0.206	0.024	0.245	8.411	.001
Availability	0.237	0.024	0.274	9.761	.001

F =180.256 $R^2 = 0.409$

Sig-F 0.001

Table 2 shows the R Square (coefficient of determination) was 0.409, which means 40.9% of the total variance in the dependent variable could be explained by these items. The F-ratio of 180.256 ($p \leq 0.05$) shows that the model was significant. The final regression equation model was measured as follows:

Y = 1.794 + 0.225 Attitude + 0.095 Habit + 0.206 Social Influences
+ 0.237 Availability ... (2)

Where,
Y = Intention to consume vegetables
Attitude =Attitude towards eating vegetables
Habit = Habit for eating vegetables
Social Influences = Influence from social environment on eating vegetables
Availability = Availability of vegetables at home and nearby areas

Attitudes towards eating vegetables ($\beta = 0.190$), habits of eating vegetables ($\beta = 0.107$), influence from family members and friends on eating vegetables ($\beta = 0.245$), availability of vegetables ($\beta = 0.272$) indicate all these variables had significant effects on intention to consume vegetables. Briefly, it can be concluded that attitudes, habits, social influences and availability are effective factors that contribute to fruits and vegetables consumption, and availability had the highest effect. This result is supported by previous studies regarding the importance of availability to increase fruits and vegetables' intake (Corwin, Sargent, Rheaume, & Saunders, 1999; Cullen et al., 2001; Erin, Kobayashi, Dubow, & Wytinck, 2008; Reynolds, Hinton, Shewchuk, & Hickey, 1999).

Availability and easy access to fruits and vegetables significantly give impact on consumption behaviour. Adults are responsible to purchase fruits and vegetables and this leads to higher consumption. The results were also supported by previous findings on the effectiveness of availability (Baker & Wardle, 2003; Smith & Smith, 2008). Duyn

et al. (2001) stated that the effect of social influences for healthy eating (e.g. partner or other members) is a major influence on fruits and vegetables consumption. These direct social interactions can have strong influences on adults' knowledge and feelings on their consumption behaviour. The findings also showed the importance of fruits and vegetables consumption among adults in facilitating their dietary change. When habit is well established, a conscious decision-making process no longer determines the behaviour (Ouelette & Wood, 1998) and psychosocial factors are therefore of less importance, since they are to a large extent already reflected in the habit. Last but not least, attitude produces a significant relationship towards fruits and vegetables consumption behaviour. Cox et al. (1998) reported that attitude is strongly associated with fruits and vegetables consumption. Attitude is the overall evaluation, including feelings, moods and emotions, as immediate direct responses to certain stimuli (Peter & Olson, 2008).

To identify the differences between socio-demographic factors and fruits and vegetables consumption behaviour, one-way analysis of variance (ANOVA) was used to identify if there were any significant differences. The differences in fruits consumption towards demographic attributes were tested to determine whether there was a significant difference ($p < .05$) for each attribute involved. Table 3 shows the results of one-way ANOVA between socio-demographic factors and fruits consumption behaviour among respondents.

It was obvious that significant differences ($p < .05$) were observed in the age group ($p=0.001$) and marital status ($p=0.001$) but not in other attributes. On the other hand, age group ($p=0.001$), ethnicity ($p=0.042$), marital status ($p=0.001$) and household income ($p=0.027$) showed significant differences towards intention to consume vegetables (Table 4). However, it was found that there were no significant differences between respondents with different educational levels and intention to consume fruits and vegetables.

Similar trends of increases in fruits and vegetables consumption in relation to advancing age were observed by Thompson et al. (1999) and Ball et al. (2006). It is known that as one gets older, the health condition of an individual is highly critical and hence they are more concerned of their food consumption. The present study showed that marital status had a significant influence on the consumption of both fruits and vegetables. This finding is consistent with previous work by Friel, Newell and Kelleher (2005) who reported that married couples usually have a greater household income compared to a single person. Interestingly, it was also observed that vegetable consumption differs among various ethnics.

Table 3: Consumption Pattern of Fruits Based on Demographic Profile

Factors	n	Mean	SD	F	p
Age				9.093	0.001
18-26	541	5.8698	1.00561		
27-35	230	6.0055	0.96144		
36-43	97	6.1161	0.9079		
44-51	86	6.2502	0.71324		
51-59	94	6.4176	0.69594		
Ethnicity				1.153	0.327
Malay	777	5.9853	0.9653		
Chinese	95	5.9316	1.00824		
Indian	47	6.0904	0.87914		
Others	125	6.132	0.89102		
Marital Status				17.56	0.001
Single	617	5.8635	1.01915		
Married	419	6.2125	0.79502		
Divorced	10	5.725	1.5521		
Educational Level				2.106	0.062
Primary School	38	6.4475	0.74238		
Secondary School	369	5.9507	0.97058		
Certificate	111	5.9438	1.04484		
Diploma	204	5.9927	0.90187		
Degree	288	6.0495	0.97683		
Postgraduate	36	6.0139	0.7019		
Household Income				1.099	0.349
<RM1000	327	5.9611	0.94653		
RM1001-RM3000	408	5.9756	0.96436		
RM3001-RM5000	205	6.0684	0.93683		
>RM5001	94	6.1197	1.03287		

Table 4: Consumption Pattern of Vegetables Based on Demographic Profile

Factors	n	Mean	SD	F	p
Age				13.451	0.001
18-26	541	5.662	1.15077		
27-35	230	5.9487	0.98155		
36-43	97	6.0552	0.96526		
44-51	86	6.1671	0.83308		
51-59	94	6.3695	0.82355		
Ethnicity				2.739	0.042
Malay	777	5.8208	1.11171		
Chinese	95	5.8577	1.01216		
Indian	47	6.1028	0.90047		
Others	125	6.0000	0.93831		
Marital Status				23.335	0.001
Single	617	5.6834	1.15043		
Married	419	6.137	0.8717		
Divorced	10	5.7000	1.53116		
Educational Level				1.921	0.088
Primary School	38	6.3518	0.83124		
Secondary School	369	5.8412	1.06693		
Certificate	111	5.7712	1.22146		
Diploma	204	5.8399	1.01342		
Degree	288	5.8862	1.11344		
Postgraduate	36	5.9894	0.68036		
Household Income				3.066	0.027
<RM1000	327	5.749	1.12279		
RM1001-RM3000	408	5.8538	1.08682		
RM3001-RM5000	205	6.0059	0.94447		
>RM5001	94	6.0145	1.11742		

The results indicated that Indians were highly motivated to consume vegetables compared with other races and it is probably due to cultural culinary practices and vegetarianism among Indian society (Kittler, Sucher, & Nelms, 2000). In this study, the respondents with household income of more than RM5000 were found to significantly consume more vegetables compared to other respondents in the lower income groups. This finding is expected, as low-income people tend to spend their income on basic needs, not on fruits and vegetables, and it is not considered as an important item to purchase in terms of the benefits. However, in terms of fruit consumption behaviour, no significant differences were found between respondents with different household income. This is due to the fact that fruits can be usually eaten anytime and is not consumed in a particular time while vegetables is part of a typical daily meal (Steven & Andrew, 2012).

Tables 5 and 6 show the differences of gender and intention to consume fruits and vegetables among Malaysian adults by using independent sample t-test.

Table 5: Differences in Fruits Consumption Behaviour between Genders

Factor	n	M	t	p
Attitude			-2.782	.001
Male	408	5.4524		
Female	638	5.5923		
Habits			-2.385	.003
Male	408	5.4382		
Female	638	5.6053		
Social Influence			-3.584	.003
Male	408	5.3440		
Female	638	5.6297		
Availability			-1.259	.239
Male	408	-1.266		
Female	638	-1.259		
Intention to Consume			-2.815	.005
Male	408	5.8990		
Female	638	6.0691		

Table 6: Differences in Vegetables Consumption Behaviour between Genders

Factor	n	M	t	p
Attitude			-2.597	.050
Male	408	5.0623		
Female	638	5.2139		
Habits			-2.150	.001
Male	408	5.0518		
Female	638	5.2199		
Social Influence			-4.330	.001
Male	408	5.1478		
Female	638	5.5065		
Availability			-2.631	.006
Male	408	5.4290		
Female	638	5.6401		
Intention to consume			-2.885	.019
Male	408	5.7440		
Female	638	5.9440		

Table 5 and Table 6 show t-test results that compared the differences between male and female groups with all variables that affect the consumption of fruits and vegetables. It shows that most of the variables were significant between gender groups where the means were higher among the female group. Possibly, it is due to women's higher health consciousness compared with men (Brannon, 2006). The results indicated that there were no significant differences in availability of fruits between genders.

CONCLUSION

The main objective of this study was to identify the effects of personal and environmental factors on intention to consume fruits and vegetables among Malaysian adults. The results present the differences between these factors. It was found that attitude, habit, social influences and availability had significant but low effect on intention to consume fruits and vegetables. These findings were supported by several previous studies (Erin et al., 2008; Cullen et al., 2001; Corwin et al., 1999; Reynolds et al., 1999). Based on the results of this study, environmental factors were more effective than personal factors to influence adults' intention to consume both fruits and vegetables. In terms of environmental factors, availability was found to be more effective than social influences towards fruits and vegetables consumption behaviour among adults. As a result, providing more locations to offer fruits and vegetables will help to increase the amount of consumption among adults. In terms of empirical implications, this study provides ideas to marketers and distributors to focus on the items that have more effects on adults' intention to consume fruits and vegetables in Malaysia. While consumption of fruits and vegetables had positive effects on society's health, the importance of consumption among people cannot be denied. The findings of this research may also shed light on the relation of some factors towards adults' intention and will help marketers and fruits and vegetables providers to determine the target consumers. Besides that, marketers can use the information and ideas from this study to further improve the marketing of fruits and vegetables and also to be more competitive in the markets.

In terms of theoretical implications, the findings of this study could provide foundation for future research in this area. It also can be suggested that this study enriches the body of knowledge of adults' consumption of fruits and vegetables in Malaysia. The important factors that were contributed and measured in this study might be used for other age groups or to develop better understanding on the consumption of fruits and vegetables among Malaysians. Since habit also produces significant effects, marketers or other authorities should educate that the health benefits of fruits and vegetables must start from the young generations. This is supported in previous researches (Verplanken & Faes, 1999) which highlighted that habits from childhood will carry on until adulthood.

There were a few limitations that may affect the current study**.** Firstly, the research instrument of this study was questionnaires. Future researches should refine the instrument in different settings (e.g. interview or focus group discussion) to produce more generalizable data. Secondly, the results confirmed that there were significant differences between personal and environmental factors with intention to consume fruits and vegetables. It is suggested that future studies measure other factors to get more in-depth data about the

behaviour of consumers. Lastly, the data only captures the adults' population regardless of their ethnicities in Malaysia. Future studies should capture the differences in consumption between ethnic groups in Malaysia. Such information would be an important source of information for the industry to better segment the market.

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Appendix

Factors Influencing Fruits and Vegetables Consumption Behaviour Checklist

No.	Variable	Mean (Fruits)	Mean (Vegetables)
1	I like to eat fruits/vegetables	6.41	6.03
2	I like to eat local fruits / vegetables	6.32	6.11
3	I like to eat imported fruits/ vegetables	5.28	4.99
4	I spend more money on local fruits / vegetables	5.50	5.37
5	I spend more money on imported fruits/vegetables	4.64	4.48
6	I like to eat fresh fruits/vegetables	6.52	6.32
7	I like to eat processed fruits/vegetables. (example : dried/pickle and canned fruits/vegetables)	3.65	3.25
8	I like to drink fruit/vegetable juice	5.97	4.71
9	I include fruits/vegetables in my main meal	5.47	5.62
10	I eat fruits/ vegetables as snacks throughout the day	5.30	4.82
11	I eat fruits / vegetables as dessert	5.77	4.90
12	I eat a lot of fruits/vegetables ever since I was a child	5.62	5.29
13	Looking at others who consume fruits / vegetables, motivates me to eat fruits /vegetables	5.38	5.09
14	Friends and family members encourage me to eat fruits / vegetables	5.82	5.78
15	'Word of mouth' influenced on my fruits / vegetables consumption	5.36	5.23
16	It is easy to find stores nearby to buy fruits / vegetables	5.84	5.78
17	Variety of choices for fruits / vegetables can be found in shop around my neighbourhood	5.58	5.57
18	I eat fruits/ vegetables because it is always available at home	5.41	5.33
19	Knowing the benefits of consumption fruits / vegetables will motivate me to consume more	6.19	6.04
20	Availability of fruits / vegetables at nearby stores and at home will increase my fruits / vegetables consumption	5.96	5.85
21	Lower prices for fruits / vegetables will stimulate me to eat more fruits and vegetables	6.05	5.91
22	I intend to consume more fruits/ vegetables if I have social support from family members and friends	5.81	5.67

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SMALL FARMERS AND FACTORS THAT MOTIVATE THEM TOWARDS AGRICULTURAL ENTREPRENEURSHIP ACTIVITIES

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ABSTRACT

Entrepreneurship in agribusiness is among efforts undertaken to transform the country's agricultural sector towards a higher dynamism. Dependence on middlemen in the marketing of agricultural products should be reduced step by step to ensure that farmers get a return commensurate with the efforts that have been put in over the years. Returns are important in motivating more individuals to enter the field of agriculture, which has been ignored especially by the young and highly educated. In addition to encouraging the participation of more individuals in the agricultural sector, good returns to farmers will also help the government to improve the standard of living of farmers while reducing the rate of extreme poverty in the future. This study was carried out to identify the factors motivating small farmers to engage in farming and entrepreneurial activities. The methodology used in this study was face-to-face interviews using set questionnaires to gather information. A total of 400 respondents from small farmers who cultivated vegetables, miscellaneous crops, fruits and aquaculture were interviewed. This study covered nine states in Peninsular Malaysia, namely, Perlis, Kedah, Perak, Selangor, Penang, Johor, Kelantan, Terengganu and Pahang. The results from this study show that the involvement of young people in farming remains low. Almost half of the respondents interviewed were aged over 50 years and most had just primary and secondary level education. In terms of entrepreneurial factors, other than knowledge of agribusiness management and marketing, the factors capital, the environment, and availability of training were the constraints that prevented small farmers from engaging in agribusiness activities.

Keywords: Small farmers, entrepreneurship factors

INTRODUCTION

The development of the retail sector in Malaysia resulted in major changes in the structure of the marketing chain for products. Some of the significant changes are the increased market shares of supermarkets, the average size of a retail store, declining retail stores as a ratio of the population and the market share of small business firms (Fatimah, 2000). Agricultural products are not exempted from this modernization in the marketing chain structure, which is usually pioneered by multinational companies.

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The entry of internationally acclaimed companies like TESCO, Carrefour, Cold Storage, JUSCO and MACRO has established a new benchmark in the marketing system for agricultural products. However, getting agricultural products on to supermarket shelves is not an easy task because it requires a consistent supply of products, large quantities, acceptable quality and reasonable prices that meet the needs of users.

In reality, the agricultural sector in Malaysia is still dominated by small farmers who are basically working on agricultural land on an uneconomic scale (Norsida & Azimi, 2007). The use of technology is at the minimum level (Norhasni, 2007).

Low productivity coupled with inefficient production costs pose hindrances in attempts to penetrate the supermarket sector. At the same time, farmers face pressure due to low offer prices which could be related to their small scale size of operations and the supermarkets' dominant position resulting from their market shares (Ariff et al., 1985 ; Fatimah, 1992).

In addition, weaknesses in terms of knowledge and experience in business management, marketing, planning and entrepreneurship also prevent small farmers from engaging in a more commercial business world. Previous studies conducted by Ariff et al. (1985) and Fatimah (1992) found that many farmers were unable to perform the functions required by intermediaries as these required business expertise and high capital.

In line with changes in the structure of marketing, agricultural products are currently experiencing a transformation that demands a paradigm shift of small farmers so that they do not continue to lag behind in the development of the retail sector in the country. Business opportunities that are available should be tapped and leveraged to enhance their income and socio-economic development in line with the slogan of the Ministry of Agriculture and Agro-based Industry "Agriculture is Business".

The government through the Federal Agricultural Marketing Authority (FAMA) has carried out promotional activities to seek marketing channels for the agricultural products of small farmers in order to help them engage in the new marketing that is consumer-oriented.

The participation of small farmers directly and actively in marketing is important to produce agricultural entrepreneurs who are competitive, self-reliant and able to grow the business to a higher level in the future. But efforts to create agro-entrepreneurs are not easy. Various aspects need to be evaluated in terms of the needs and factors that drive and attract them to participate in entrepreneurship.

This research aims to study the needs of farmers in Malaysia in order to encourage and increase their involvement as agro-entrepreneurs. Thus, the specific objective is to identify the factors for developing entrepreneurship among small farmers and to recommend policies as well as strategies towards the development of agro-entrepreneurs among small farmers.

It is hoped that this study will provide an overall view of the state of entrepreneurship among small farmers which could serve as a guide in creating successful agro-entrepreneurs in

the future and also assist the government in increasing the incomes of households while contributing towards achieving a high income nation status by 2020.

LITERATURE REVIEW

Entrepreneurs are defined as people who are involved in a business or enterprise whether in agriculture, livestock, production or service (Sahri, 2007). Meridith, Nelson and Neck (1982), however, state that entrepreneurs are individuals who are able to predict opportunities, gather resources that are needed such as time, energy and money, and take actions that are necessary to ensure success. This opinion differs from Kuratko and Hodgetts (2004) who see entrepreneurs as individuals who face uncertainty in many respects. Meanwhile, Drucker (1985), through a more comprehensive approach, states that entrepreneurs are individuals who are able to transfer economic resources from less productive sectors to those with higher productivity. Meanwhile, Buang (2002) takes the view that entrepreneurs are individuals who successfully create value added to the market.

The role of entrepreneurship in improving the productivity and economic growth of a country is undeniable (Covin & Slevin, 1991; Zahra, 1991). In fact Harper (1991) encourages entrepreneurial activities, particularly in a developing country, in order to stimulate economic growth. This argument is supported by Sternberg and Wennekers (2005) who found that there is a positive relationship between entrepreneurial activities and economic growth. Adenutsi (2009) concluded that entrepreneurship not only created jobs, generated incomes and reduced poverty, but it is a driver to innovation, redistribution of income, knowledge and technological development.

The Labour Force Survey by the Department of Statistics Malaysia in 2009 found that the percentage of entrepreneurs in Malaysia is still small compared to the working population. The percentage of entrepreneurs was found to have decreased to 20.9 per cent in 2008 compared with 25.1 per cent in 1982. The survey shows that most of the people in this country are more comfortable with salaried jobs, either in the public or private sectors, offering fixed incomes and less risk (Norhasni, 2007). However, the agriculture, hunting and forestry industries showed an increase in the number of entrepreneurs involved, which increased 11 per cent in 2008 compared to 2001 (Department of Statistics Malaysia, 2009).

In efforts to create successful entrepreneurs, understanding factors that contribute to the success of entrepreneurs is important. Maidique and Zirger (1985) see success as an achievement that is desired, planned or undertaken and it is very closely related to the personal characteristics of entrepreneurs such as hardworking (Lee & Chan, 1998), a strong desire to achieve the requirements, comfortable with the actions taken, goal-orientation, risk taking, energetic and able to deal with doubt (Osborne, 1995). According to Markman and Baron (2003), the values or personal characteristics of entrepreneurs is directly or positively related to the success of entrepreneurs, where the closer the individual is to personal values or characteristics, the more successful he will be.

Apart from internal or personal factors which cover personal characteristics or personality of the individual that is the focus in most previous studies (Jo & Lee, 1996; Lee & Chan, 1998; Markman & Baron, 2003; Osborne, 1995), there are also studies on external factors

that drive the success of entrepreneurs conducted by researchers, including Jo and Lee (1996), Lussier (1995) and Yusof (1995) who find that education and experience gives a positive impact on the business. This is supported by Nurulhuda and Ramlee (2009) who held the view that agricultural entrepreneurs in the Small and Medium Industries (SMI) who want to start a business must have prior work experience, good academic qualifications, and undergo related training or courses so that they could manage the business effectively.

In addition, aspects of business management are also a contributor to the success of the business. Azmi et al. (2012) through his study on 70 entrepreneurs found that management experience is one of the critical factors that determines the success of entrepreneurs. Meanwhile, Ahmad (2000) found that most organisations, whether large or small, usually fail as a result of weaknesses in business administration, especially in the financial aspects. This is in line with the findings of Monibo and Kilby (1998) that entrepreneurs failed due to inefficient management and financial management problems.

Apart from that, the support of the government also has a significant impact on entrepreneurs and businesses. Ahmad (2001) through a study on Malay entrepreneurs found that support from the government plays a role in determining the success of businesses. This fact is collaborated by Jennsen and Havnes (2002) from studies in Norway that proved that entrepreneurship programmes conducted by the government helped the business activities of the entrepreneurs. Sofian and Nawawi (2007) found that government support through training programmes can increase creativity, innovation, motivation and entrepreneurial skills. However, Makhbul and Hasun (2011) found that political, social networks and support from the government had only a minimal contribution to the success of entrepreneurs.

Meanwhile, Kamisan and Nek Kamal (2009)'s study on the influence of personal and socio-economic factors that motivate women in entrepreneurship in Malaysia found that social networking benefits business. These results are consistent with previous studies on entrepreneurship by Gregoire et al. (2001) which placed social networking among the five crucial factors in influencing business.

In conclusion, there are various factors that influence entrepreneurs' involvement in business activities. However, specific studies relating to small farmers and entrepreneurial factors have not received much attention in Malaysia. Therefore, it is hoped that this study will provide useful information which will assist in efforts to produce successful agro-entrepreneurs both locally and globally.

METHODOLOGY

Primary data was obtained through interviews and distribution of questionnaires while secondary data was obtained from books, reports, scientific research, magazines, and information from government officials involved in the agricultural sector.

Structured questionnaires were distributed in nine states in Peninsular Malaysia, i.e., Perlis,

Kedah, Perak, Selangor, Penang, Johor, Kelantan, Terengganu and Pahang. A total of 400 respondents from small farmers involved in the cultivation of vegetables, miscellaneous crops, fruits and aquaculture were interviewed in person (face-to-face). The interviews were conducted with the help of 20 enumerators.

Random sampling was carried out by applying the proportionate stratified random sampling technique to ensure that the respondents in each stratum were selected in a fair and equitable manner. The sampling frame was obtained from the State Agriculture and Fisheries Departments to enable random selection of respondents. Samples were selected based on the size of the land holdings and commodities cultivated. For vegetables and miscellaneous crops, samples were taken for land areas of less than 5 hectares, while samples for fruits were taken from areas of less than 10 hectares. For aquaculture, the size of holdings was less than one hectare of land size or having less than 5 ponds. The distribution of small farmers in Malaysia and sample distribution is shown in Table 1.

Table 1: Distribution of Samples of Small Farmers in Malaysia

Strata	Types	Estimated Population	Relative Frequency (%)	Number of Samples
1	Vegetables	14,100	45.0	180
2	Fruits	13,200	42.0	168
3	Miscellaneous Crops	2,000	6.5	26
4	Aquaculture	2,000	6.5	26
Total		**31,300**	**100.0**	**400**

Sources: FAMA Portal and the Agriculture and Fisheries Office, 2007.

The total of 400 respondents was sufficient to represent the population of around 20,000 to 30,000 as the minimum size of the sample for the population is between 377 to 379 (Sekaran, 2003).

The sample was divided into four regions, namely the Northern Region consisting of Perlis (3.3%) and Orissa (4.5%); the Central Region consisting of Perak (4.5%), Selangor (8.8%) and Negeri Sembilan (1.0%); the Southern Region consisting of Johor (10.8%); and the Eastern Region of Kelantan (23.2%), Terengganu (5.3%) and Pahang (38.5%).

The questionnaires were drawn up based on information and feedback received through a pilot study conducted on small farmers and agro-entrepreneurs in Penang. These questionnaires had six parts, namely (A) Background of agro-enterprise, (B) Evaluation of the progress of the agro-enterprise, (C) Personal characteristics of farmers, (D) Entrepreneurship factors, (E) Information on services from the government, and (F) Background of entrepreneur. For this study, the focus was on the fourth part, i.e., the entrepreneurial factors. A Likert scale containing five options ranging from (1) Very low, (2) Low, (3) Moderate, (4) High, and (5) Very high was used to determine the level of entrepreneurship among small farmers. Information and data obtained from questionnaires were coded and analysed using SPSS software. Data accuracy tests (data adequacy) were

conducted to determine whether the data obtained were fit to undergo factor analysis or otherwise. The accuracy of data was evaluated through the Kaiser-Meiyer-Olkin indicator (KMO) and Bartlett's Test of Sphericity.

Then factor analysis was carried out to identify the factors determining entrepreneurship. Factor analysis was begun by calculating the correlation matrix for all relevant variables. The Varimax Rotation method was adopted to minimise the problem of cross loading. Next, reliability analysis was conducted to determine the relevance of variables in each instrument for entrepreneurial factors.

FINDINGS AND DISCUSSION

Demographics of Respondents

The demographic characteristics of the respondents for this study are shown in Table 2. Malays formed the majority of respondents at 239 (60.2%), followed by Chinese with 124 (31.2%) and Indians 34 (8.6%). In terms of gender, 84 per cent of the total respondents were men. While a breakdown by age showed that almost half of the respondents were over the age of 50 years (46.1%), followed by those aged between 41-50 years (26.5%) and only 7.4 per cent were aged under 30 years. The bulk of respondents had a primary education (45.7%) and secondary education (42.3%).

Table 2: Demographic Information of Respondents

Item	N	%
Community		
Malay	239	60.2
Chinese	124	31.2
Indian	34	8.6
Gender		
Male	332	83.6
Female	65	16.4
Age (years)		
Less than 21	3	0. 76
21-30	26	6.5
31-40	79	19.9
41-50	104	26. 2
Over 50	181	45. 6
Not known	4	1.0
Level of Education		
Primary	183	4 6.1
Secondary	167	42 .1
Higher education	40	10. 0
No formal education	7	1.8

Accuracy of Data

Table 3 shows the results of the accuracy test that was conducted on a sample of the data collected. The results show that the data is relevant to undergo factor analysis when the Kaiser-Meiyer-Olkin (KMO) is located at a score of 0.881. According to Kaiser (1974), a value exceeding 0.5 for the KMO indicator is acceptable for factor analysis, while Hatcheson and Safroniou (1999) refined it by stating that a value of 0.5-0.7 is satisfactory, 0.7-0.8 is good, 0.8-0.9 very good, and a value exceeding 0.9 is the best. Meanwhile, the Bartlett's Test of Sphericity was significant at the level of p <0:00, which indicates that there are links among each of the variables (r = 1) in the population correlation matrix (the identity matrix) but not directly linked to other variables (r = 0) and therefore, factor analysis should be carried out.

Table 3: Test of Data Accuracy

Kaiser-Meyer-Olkin measure of sampling adequacy	0.881
Bartlett's Test of Sphericity	
Approx. Chi-square	8540.00
Degrees of freedom	435
Significance	0.000

Reliability Analysis

Reliability analysis was conducted to test each of the factors that have been developed from factor analysis. The Cronbach Alpha coefficient of reliability was applied to determine which factors could be extracted and the value of this coefficient lies between 0 and 1. The higher the factor score means the more relevant the variables in this factor. According to Nunnally and Bernstein (1994), the value of of 0.7 is the recommended coefficient value that is used to accept the decision of the reliability analysis while Bagozzi and Yi (1988) decided on 0.6 as a benchmark of acceptance. However, there are also some studies that used a lower value than that (Santos, 1999). From the tests conducted, all the seven factors that had been identified obtained the value of Cronbach Alpha coefficients greater than 0.7 indicating that the data collected is consistent and reliable (Table 4).

Table 4: Reliability Analysis for Entrepreneurship Factors

Instrument	**Cronbach Alpha**	**Total Items**
Factor 1: Environment	0.885	4
Factor 2: Capital	0.928	5
Factor 3: Training	0.900	4
Factor 4: Customer Focus	0.772	6
Factor 5: Management Knowledge	0.843	5
Factor 6: Marketing Knowledge	0.868	3
Factor 7: Cooperation	0.878	3

Entrepreneurship Factors

As a result of tests on 30 variables using Principal Component Analysis with Varimax rotation, seven factors were identified as factors that encouraged small farmers to become entrepreneurs. These factors are (1) Environment, (2) Capital, (3) Training, (4) Customer Focus, (5) Management Knowledge, (6) Marketing Knowledge, and (7) Cooperation. All these factors met the selection criteria with eigen values exceeding 1. The percentage of variance explained by the factors is shown in Table 5 and the cumulative variance was 75.1 per cent.

Table 5: Percentage of Variance Explained

Factor	Eigen Value	Variance Explained
(1) Environment	4.279	14.26
(2) Capital	4.022	13.41
(3) Training	3.160	10.53
(4) Customer Focus	3.114	10.38
(5) Management Knowledge	3.098	10.33
(6) Marketing Knowledge	2.547	8.49
(7) Cooperation	2.302	7.67
Cumulative (%)		75.1

Factor 1: Environment: This factor explained about 14.26 per cent of the total variance. Contains four variables that have a loading factor of around 0.794 to 0.863. The four variables consisted of (1) reduce environmental pollution, (2) environmental protection through agricultural activities, (3) the use of organic resources, and (4) reduce the use of pesticides. The highest score of 0.863 was obtained by variable (1), while the lowest score of 0.794 was obtained by variables (3) and (4). There were three variables that were excluded from this factor as the variables had higher loading factor in Factor 4: Customer Focus as shown in Table 6. Analysis shows that the environment is among the drivers of an individual's involvement in agriculture. Involvement in farming assists them towards environmental sustainability through the use of organic resources, minimal pesticides and ability to provide safe and high quality food products to consumers.

Factor 2: Capital or Funds: Contains five variables. The variables include (1) the need for funds or government grants, (2) initial capital requirements, (3) loan facility, (4) working capital needs and (5) the need for subsidies. Among the five variables, the variable (1) had the highest score of 0.860 while the fifth variable had the lowest score of 0.806. The findings from this analysis shows that funds or financial resources are needed to allow farmers to carry out large-scale agricultural activities and further involve themselves in agribusiness. This factor explained about 13.41 per cent of the total variance.

Table 6: Factor Analysis for Entrepreneurship

Variables	Factor						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Reduce environmental pollution	0.863						
Taking care of the environment through farming	0.820						
Use of organic resources	0.794						
Reduce the use of pesticides	0.794						
The need for support / government funds		0.860					
Initial capital requirements		0.856					
The need for working capital		0.817					
The need for subsidies		0.806					
Training to increase the quantity / quality of produce			0.865				
Marketing courses			0.865				
Cultivation courses			0.859				
Market consultant guidance			0.675				
Product branding				0.814			
Value added to the product				0.758			
Efforts to meet customer needs	0.513			0.626			
Efforts to improve the quality of agricultural produce	0.500			0.577			
Efforts to reach the recommended quality	0.550			0.560			
Efforts to understand the needs of customers				0.527			
Knowledge of farming					0.810		
Knowledge of farm management					0.789		
Farming skills					0.780		
Experience in farming					0.647		
Marketing knowledge					0.576		
Experience in marketing of farm produce						0.859	
Marketing skills						0.837	
Guidance from crop consultants						0.740	
Sharing of information between dealers and dealers							0.860
Collaborative relationships in farming and marketing activities							0.787
Networks and networking in farming activities							0.762

Factor 3: Training: This factor accounted for about 10.53 per cent of the total variance in the factor analysis conducted. There were four variables in this factor consisting of (1) Training to increase the quantity/quality of produce, (2) Courses on marketing, (3) Courses on cultivation and (4) Guidance from market consultants. Variables (1) and (2) had the highest score of 0.865 among the variables in this factor while variable (4) had the lowest score of 0.675. The analysis shows that the training factor was a key booster of participation in agribusiness. Training is needed to overcome the weaknesses and shortcomings from the production stage to the marketing stage.

Factor 4: Customer Focus: The fourth factor had six variables and explained 10.38 per cent of the total variance. The six variables were (1) Product branding, (2) Product value added, (3) Efforts to fulfil customer requirements, (4) Efforts to improve the quality of agricultural produce, (5) Efforts to achieve the recommended quality, and (6) Efforts to understand the requirements of customers. For this factor, variable (1) obtained the highest score of 0.814 while the lowest score of 0.527 was obtained by variable (6). On the whole, this factor was fundamental to the success of agricultural entrepreneurs in the business world because business is highly dependent on the customer. Understanding of customer needs and wants helps entrepreneurs to improve their market and thus provide better returns to them.

Factor 5: Management Knowledge: Describes about 10.33 per cent of the total variance analysis carried out. This factor has five variables, namely (1) Knowledge in farming, (2) Knowledge in farm management, (3) Farming skills, (4) Experience in farming, and (5) Knowledge in marketing. Variable (1) Knowledge in farming had the highest score of 0.810 compared to the other variables. The lowest score was obtained by variable (5), i.e., marketing knowledge with a score of 0.576. The analysis shows that knowledge in farming, management knowledge, skills as well as experience, are key elements for small farmers to participate in the agribusiness field.

Factor 6: Marketing Knowledge: Consists of three variables, namely (1) Experience in marketing of farm produce that had the highest score of 0.859, (2) Marketing skills, and (3) Guidance from crop consultants that scored the lowest score (0.740). The analysis shows that marketing experience is important in helping agro-entrepreneurs market their crops more effectively and efficiently.

Factor 7: Cooperation: This factor contributed about 7.70 per cent of the total variance in the description of this factor analysis. Contains three variables that have a factor loading of between 0.762 and 0.860. Variable (1) Sharing of information between entrepreneurs and traders had the best score of 0.860, followed by variable (2) Cooperation in farming and marketing activities of 0.787, and finally variable (3) Network and networking in farming activities with a score of 0.762. This shows that small farmers believe in cooperation in information sharing, exchange of ideas, experience and others so that positive impact on farming and marketing activities is generated.

CONCLUSION

Factor analysis has identified the seven factors that encouraged the involvement of small farmers in the field of entrepreneurship. These factors were environment, capital, training, customer focus, management knowledge, marketing knowledge and cooperation. Based on the findings of this study, the factor capital, consisting of initial capital requirements and working capital as well as loans, is among the factors to be given attention because it is among the constraints that prevented many small farmers from expanding agricultural activities and engaging in the business world.

In addition, training, workshops and courses related to farming and agribusiness activities need to be undertaken by government agencies, thus increasing their productivity, skills and competence of farmers and agro-entrepreneurs in their respective fields. Continuous monitoring by the responsible agency should be followed by training programmes, workshops and courses. This is to ensure that all inputs received during the training, workshops or courses are practised in the farm or business of the participants, and in turn, ensure returns on every cent of investment made by the government.

Meanwhile, entrepreneurs and traders should also play a proactive role to equip themselves with knowledge on management and marketing. Knowledge on management and marketing is crucial in ensuring the success of the business to be undertaken. This knowledge could be acquired through courses organised either by the government or private sectors, as well as through sharing of experiences and information with those who have been involved in the relevant agribusiness fields. These information and experiences could help agro-entrepreneurs face challenges in the business world.

In addition, attention should be given to efforts to produce more farmers to venture into agro-entrepreneurship in the future. Efforts to attract young people should be doubled by providing more comprehensive exposure starting from primary education and extending to secondary and tertiary levels. The subject of entrepreneurship and agriculture should be a compulsory or core subject to create interest in the field of agriculture and entrepreneurship that could become an alternative career to salaried jobs upon completion of schooling or graduation.

The involvement of young people in the agricultural sector should be improved to transform the sector and make it more competitive in the future. A paradigm shift needs to be implemented because the results of this study shows that the agricultural sector is still dominated by the older group when about 71.6 per cent of the respondents who were interviewed was 40 years or older. These findings are in line with the findings of studies conducted by previous researchers.

Due attention should be given by the relevant authorities to the factors that have been identified to ensure that a culture of entrepreneurship and business prevails among farmers in Malaysia. This is consistent with the efforts of the government to increase the per capita income of the population towards a high-income economy by 2020.

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