



A Study on Premium Packaging for Fresh Agricultural Products

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ABSTRACT:

This paper provides a value proposition and an assessment of customer value based on producers and consumer-perceived quality to utilize premium packaging for agricultural products. This paper concentrates on assessing the definition of premium packaging from customers' perspectives, trends in fruits and vegetables premium packaging and studying the marketing implications resulting from the use of premium packaging. A total of 386 consumers and 54 wholesalers completed the questionnaire. The data were analyzed using descriptive analysis, comparison of mean test and finally SWOT analysis was implemented to suggest strategic actions. Most of the respondents are interested in purchasing agricultural products using premium packaging. The most common products identified for premium packaging are red apples, tomato, celery, and flowers. The impact of household income is identified by the willingness to pay premium packaging for agricultural products according to household income. Because a premium image is of critical importance for many consumer goods, it is important for both designers and marketers to have a comprehensive understanding of the packaging characteristics that can evoke such a premium perception. The present research integrates knowledge from design research and marketing research to enhance the understanding of the role of packaging design in shaping consumers' product perceptions. Considerations when designing premium packaging could be four premium cues (extraordinary differentiation, high quality of packaging materials, minimalistic design, and authenticity) as important guidelines. When these premium cues are implemented in a packaging design, consumers will recognize the product as a superior, high-quality product that is worth a higher price.

KEYWORDS: Premium packaging, agricultural products, fresh, fruits, vegetables, flowers, consumers, willingness to pay

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INTRODUCTION

The fruit market in Asia countries has experienced significant transformations over the past decade, transitioning from predominantly selling domestically grown produce to the widespread commercialization of imported fruits from various nations across the globe. The shift in fruit marketing has resulted in a significant rise in production, which is associated not only with the increased availability of off-season foods but also with the expanded selection of fruit types (Kim et

al., 2019). Furthermore, during the past few decades, there has been a notable implementation of production systems that prioritize environmental and health considerations, such as organic and bio methods. Based on recent research findings, it is projected that the global agricultural packaging market will witness a substantial expansion in its size and market share, with an estimated value of USD 7.12 billion by the year 2028 (Vantage Market Research, 2021). This represents a significant increase from its value of USD4.53 billion in 2020, indicating a compound annual growth rate (CAGR) of 5.81% during the forecast period spanning from 2021 to 2028 (Vantage Market Research, 2021). Rising demand in agricultural product packaging to increase the shelf life is expected to drive the agricultural packaging market (Mugge et al., 2014). Consumers are attracted to good-quality packaging methods. The relation between a polished outer appearance and the assumed excellence of its contents is strong, and an important part of marketing (Kuvykaite, 2009). Due to such factors, there is high demand for the agricultural packaging market globally.

The packaging of fresh agricultural products is a part of the product attribute that consumers need and value (Fernández-Serrano et al., 2021). The basic function of a product is to fulfill the consumer's basic needs and the benefits are valued by product attributes in branding and packaging. Processing and packaging are the two important phases of operations in the food industry and the final phase is the packaging stage. A great deal of automation strategies was constantly being utilized in every phase of processing and packaging. The correct packaging enables processors to pack fresh and fresh-cut fruit and vegetables and extend their shelf-life (Scetar, 2010). The important parameters for this shelf-life extension are temperature, moisture and a modified atmosphere (oxygen, carbon dioxide, and ethylene) (Scetar, 2010). If both temperature and packaging are optimal, aging of fruit and vegetables can be slowed down significantly (Scetar, 2010).

While studies on manufacturers' acceptance and consumers' willingness to pay for premium packaging for agricultural products are also still found to be under implemented. The concept of price premium refers to the additional amount of money that consumers are willing to pay for a product, beyond what is considered a fair price based on the product's genuine value (Wang et al., 2019). This excess payment can serve as an indicator of customer demand for the product. The findings of the study reveal that the primary determinants impacting individuals' inclination to pay a higher price are favorable attitudes towards organic labeling, concerns over fruit safety, and the perceived significance of fruit attributes (Wang et al., 2019). Premium packaging is designed to improve consumers' perception of quality and value, using premium materials, shapes, colors, and textures and superior design features (Mugge et al., 2014; Chung & Jang, 2019). The primary determinants impacting individuals' inclination to pay a higher price are favorable attitudes towards organic certification, concerns over the safety of fruits, and the perceived significance of fruit attributes (Wang et al., 2018). In Wang et al., (2019) study, the organic food is the primary factor towards premium price. Hence, studies related to the effects of high-tech packaging on agricultural products are still lacking and need to be further examined. In addition, a study related to the packaging material itself is very important as it will affect the quality of this fresh agricultural product. This research was conducted to achieve the following objectives: i) to study the marketing implications resulting from the use of premium packaging, ii) to measure the cost of premium packaging, and iii) to determine consumer willingness to pay for premium packaging of agricultural products. The research concentrates on trends in fruit- and vegetable- premium packaging.

LITERATURE REVIEW

Importance of Design and Packaging

Understanding the impact of various sensory cues, including color, shape, texture, and sound, on consumers' perceptions and behaviors is crucial for both marketing professionals and academics. This knowledge enables them to comprehend how brand aspects, particularly the packaging of products,

can shape consumer responses. According to Appiah and Kumah (2009) packaging is defined as “the art, science, and technology of enclosing or protecting products for distribution, sale, storage and use”. Appropriate packaging is an essential element of an agricultural product to ensure quality, reduce damage, and ensure food safety and cleanliness of agricultural products. Various agricultural packaging has been used in the market to maintain the freshness and quality of perishable agricultural products, among the premium packaging.

Packaging design is a major element in marketing promotion as a critical and important critical sales tool (Chung and Jang, 2019). In dynamic sales environments, with increasing competition, rising costs and diminished effectiveness of advertising, packaging has become the principal channel for delivering marketing messages. While pack shape, size, colour, and convenience features can all play a part in encouraging purchase, the primary messages are normally delivered with a package’s text and illustration (Romeo-Arroyo et al., 2023). It is for this reason that so much attention and resources are now devoted to the perfecting of package appearance.

Kuvykaite (2009) described packaging as the interface between the product and the consumer. It expresses the brand identity of the product, it’s in elements of packaging stimulate the attraction of consumers to a brand, boost its image and affect consumers’ perceptions of a product. This position confirms the assertion made by Rundh (2005) that packaging captures the attentiveness of consumers to some brands, raises its image and positively increases the perception of consumers about the product. The material used in packaging is an important element which protects the products from any damage or loss. There is a high probability that high quality packaging materials might attract customers more than low quality materials. To this end, packaging material has a strong impact on buying behavior.

Packaging Characteristics Elements

Packaging characteristics elements are defined as “all the features, both visual and informational which are identified with a package”. A previous study by Kuvykaite (2009) reported that there were six key elements which needed to be prioritized by designers of packaging to establish efficiency since they had significant influence on consumers’ selection of a product. These include material, flavor, color, form, graphics, and size. Besides, the visual characteristics element of a package is significant in product appreciation since they establish enormous attention and are captured at a faster speed (Kwaku and Fan, 2020). In contrast, Kuvykaite et al. (2009) argued that packaging elements have some impacts on purchase decisions of consumers, economics and management posited that the most crucial visual elements for influencing consumers’ purchase decision.

Packaging can also serve as a marketing tool to attract consumers and differentiate products from competitors. The packaging of agricultural products is an essential factor in enhancing the marketing of agricultural products (Kwaku and Fan, 2020). Industry players have undergone many changes in product packaging technology in response to the current innovative and environmentally friendly packaging technologies. Agricultural products can be packaged using various types of packaging, such as bulk or premium packaging. Premium packaging is intended to enhance aesthetic value, and functionality of the packaging is used as a marketing strategy (Mugge, 2014), even though it is more expensive. Currently, many agricultural products are packaged using premium packaging using innovative technologies where the durability, quality, and shelf life of agricultural products can be improved. There are four (4) types of technological and innovative packaging that were considered for this study as follows: i) Active packaging; ii) Biodegradable; iii) Vacuum packaging and iv) Shrink wrapping. Premium packaging also has information on the nutrition of the food, the duration of use, and accreditation from the relevant agencies to increase the consumer's confidence to purchase agricultural products.

Apart from ensuring the freshness of agricultural products, premium packaging aims to increase sales with an attractive presentation style, easy to carry, and exclusive features by applying technology (Pechinthorn et al., 2021). The change in the lifestyle of Malaysians who care about eating healthy food causes this premium packaging to be in high demand among consumers because some of this premium packaging has information about the food (Nor et al., 2022).

Biodegradable packaging is one of the food product packaging alternatives that wholesalers often use for their agricultural products (Camilleri et al., 2023). This type of packaging can prevent chemicals for environmental conservation (Camilleri et al., 2023). The potential use of edible packaging for vegetable and fruit products can inhibit moisture, inhibit the growth of microorganisms, and inhibit oxidation (Ariyanto et al., 2019, Cai et al., 2021). Active packaging involves the use of materials that actively interact with the food to extend its shelf life. Active packaging serves not only to accommodate and protect food from damage but also to act proactively to prevent or slow down the process of decay (Just and Goddard, 2023). Shrinking wrapping is a packaging method using transparent plastic that shrinks tightly on fruits, vegetables, and flowers while vacuum packaging is a packaging method to remove air in the packaging.

Effect of the Design and Packaging on the Buying Decision

The various purposes of packaging, including sales, advertising, and service, should not be disregarded. The advertising popularity of packaging is ultimately determined by consumers' purchasing decisions. Unquestionably, the act of making a purchase involves careful consideration of several qualities associated with the commodity in question. The communication of a product's features to consumers is significantly influenced by the design of its packaging. For instance, Chung and Jang (2019) reported that in recent times packaging could be considered as one of the most essential elements of marketing communications. They indicated that packaging has an important effect on the buying behavior of consumers, revealing that the effect of elements of packaging can influence the buying decision of consumers. Romeo-Arroyo (2023) stated that the perceived flavor of a product can be influenced by the color of its packaging. Premium packaging was identified to have influence towards sensory liking and willingness to pay by the consumer (Gunaratne et al., 2019).

Premium Packaging for Agricultural Products

Premium packaging is a marketing tool that helps to differentiate and add value to agricultural products. There exists a degree of disparity among authors and practitioners on the precise definitions of the phrase "premium" packaging. Premium brands are commonly associated with items that exhibit exceptional quality, are priced at a higher range, are distributed selectively through top-tier channels, and employ a restrained approach to advertising. These products are also known for their ability to create a sense of exclusivity, establish a strong brand identity, generate widespread brand recognition, and maintain consistent sales levels and consumer loyalty (Chung and Jang, 2019). Premium packaging has exclusive, quality, and luxury characteristics (Mugge et al., 2010). Meanwhile, fresh agrarian products are fruits and vegetables. The agricultural sector has been experiencing an increase in demand for premium packaging due to the growing importance of branding and consumer preferences (Fernández-Serrano, et al., 2020). Premium packaging helps to differentiate and add value to agricultural products, which in turn can lead to increased sales and profits (Naik and Gantasala, 2014). According to a report by MarketsandMarkets (2015), the global premium packaging market is expected to reach \$25.7 billion by 2020, with a compound annual growth rate of 4.4% from 2015 to 2020. Premium packaging has been shown to have a significant impact on consumer behavior (Wang et al., 2018). A study conducted by Chung and Jang (2019) found that premium packaging can lead to a positive perception of the agricultural product quality and

willingness to pay (WTP) a higher price. Another study by Naik and Gantasala (2014) found that premium packaging can also lead to increased purchase intention and customer satisfaction. One of the packaging options that has gained popularity in recent times is premium packaging. This packaging style adds value to the product and enhances its appeal to the consumer. There are several different types of premium packaging options for agricultural products.

Sustainable Packaging:

Sustainable packaging is becoming increasingly popular in the agriculture industry due to the growing awareness of environmental concerns (Chan et al., 2020). The significance of packaging in mitigating food waste should be underscored, considering the substantial environmental consequences associated with food waste that surpass the environmental impact of packing (Ketelsen et al., 2020). Sustainable packaging is made from renewable, biodegradable, or compostable materials that minimize waste and reduce the carbon footprint of the product (Yang et al., 2021). Sustainable packaging is not only eco-friendly, but it also appeals to consumers who are environmentally conscious. Examples of sustainable packaging for agricultural products include biodegradable bags, compostable trays, and recycled paperboard packaging (Yang et al., 2021). However, the perception of sustainable packaging as unattractive is a significant problem in terms of its design and aesthetic aspects and leads to marketing issues (Camilleri et al., 2023). According to Krah et al. (2019), the use of sustainable packaging may potentially compromise consumer-perceived usability when compared to conventional packaging. Certain sustainable packaging materials exhibit sensitivity to moisture, hence potentially impacting the integrity of the enclosed product (Camilleri et al., 2023). This problem can provide a drawback, as consumers might value convenience and user-friendliness as key factors in their decision-making process for purchases.

Glass Packaging:

Glass packaging is a popular choice for premium packaging in the agriculture industry. Glass packaging provides an excellent barrier to air and moisture, ensuring the quality and freshness of the product (Olsmats et al., 2015). Glass packaging is also esthetically pleasing and adds value to the product. The transparency of glass packaging also allows the consumer to see the product, which can increase the appeal and encourage purchase. Examples of agricultural products that use glass packaging include olive oil, honey, and jams. However, glass packaging has its drawbacks as it tends to be more expensive, which can pose a financial burden. Additionally, glass packaging is characterized by its substantial weight, making it more cumbersome to transport and handle. Furthermore, its fragility renders it susceptible to breakage, further complicating its handling and transportation (Ganczewski & Jemielniak, 2022). The breakability of glass packaging might give rise to significant health and safety concerns (Ganczewski & Jemielniak, 2022). The carbon footprint of glass is comparatively higher than that of plastic because of the energy-intensive procedures entailed in its production and transportation. Furthermore, it has been observed that the weight of glass packaging has the potential to escalate transportation expenses and contribute to the release of carbon emissions (Olsmats et al., 2015).

Metal Packaging:

Metal packaging is a popular choice for premium packaging for agricultural products such as canned fruits and vegetables. Metal packaging provides an excellent barrier against light, air, and moisture, ensuring the quality and freshness of the product (Akram et al., 2023). Metal packaging is also durable, tamper-evident, and recyclable, making it a sustainable option for premium packaging. Examples of metal packaging for agricultural products include tin cans, aluminum cans, and steel cans (Liu et al., 2021). But the negative impact of metal packaging for fruit is the risk of contamination from harmful metals, such as tin, chromium, cadmium, and lead (Diviš et al., 2017). The potential for these elements to migrate into the fruit from the metal packaging presents a

significant concern in terms of consumer health and safety (Akram et al., 2023). Furthermore, it is worth noting that metal packaging often necessitates the application of a lacquer coating to safeguard the fruit from direct interaction with the metal surface (Akram et al., 2023). This introduces an additional level of intricacy and the possibility of complications, such as rusting (Diviš et al., 2017). Metal packaging, namely cans, possess a substantial weight and size, hence leading to escalated transportation expenses and heightened carbon emissions (Mangaraj et al., 2009) and finally the risk of corrosion contaminated with the food (Montanari and Zurlini, 2017)

Plastic Packaging:

Plastic packaging is a popular choice for premium packaging for agricultural products such as fruits and vegetables. Plastic packaging provides an excellent barrier against moisture and oxygen, ensuring the quality and freshness of the product. Plastic packaging is also lightweight, making it easy to transport and handle. Plastic packaging can also be designed to be aesthetically pleasing and appealing to the consumer. Examples of plastic packaging for agricultural products include clamshell packaging, PET bottles, and vacuum-sealed bags (Schmidt et al., 2021). However, the utilization of non-biodegradable substances in the production of plastic packaging has been observed to result in substantial harm to the environment and a build-up of waste (Wohner et al., 2019). Plastic films may not manage exchanges of gas and humidity, reducing fruit durability and nutritional value (Mangaraj et al., 2009). It can puncture or rip, spoil or contaminate fruit (Mangaraj et al., 2009). Moreover, it has been observed that plastic packaging has the potential to emit detrimental substances, such as phthalates and bisphenol A (BPA), which can permeate into the fruit and consequently expose consumers to health hazards (White & Lockyer, 2020). One of the foremost drawbacks associated with plastic food packaging is its adverse environmental consequences (Krah et al., 2019). Plastic is classified as a non-biodegradable substance, indicating that its decomposition process can span several centuries (Krah et al., 2019). Plastic trash has the potential to cause harm to species and contribute to the pollution of aquatic ecosystems, including oceans, rivers, and lakes.

Paper Packaging:

Paper packaging is a popular choice for premium packaging for agricultural products such as tea, coffee, and spices. Paper packaging is environmentally friendly, recyclable, and biodegradable, making it a sustainable option (Santana et al., 2020). Paper packaging can also be designed to be aesthetically pleasing and add value to the product. Examples of paper packaging for agricultural products include paper bags, paperboard boxes, and paper pouches. However, according to Ariyanto et al. (2019), paper packaging exhibits higher permeability to gases and moisture, hence increasing the susceptibility to accelerated decomposition and diminished freshness. Furthermore, it should be noted that paper packaging has a higher vulnerability to physical harm, including tearing or crushing, hence potentially leading to the occurrence of fruit bruising or rotting (Chonhenchob & Singh, 2005). Maintaining cleanliness and hygiene of paper packaging might pose more difficulties, particularly in environments characterized by high humidity or moisture levels (Santana et al., 2020). This phenomenon can elevate the likelihood of microbial proliferation and hence risking food safety (Santana et al., 2020).

Vacuum Packaging:

Vacuum packaging involves removing the air from the packaging to create a vacuum seal. It is an excellent option for products that require extended shelf-life, such as meat, cheese and fresh products. Vacuum packaging prevents the growth of bacteria and fungi, which can cause spoilage (Wu, 2000). It also helps to maintain the color, texture, and flavor of the product (Chung and Jang, 2019).

However, the process of vacuum packaging has the potential to induce alterations in the texture of fruits, resulting in a softer or mushier consistency (Shirvani et al. 2023, Chandra et al.,

2018). This outcome can be attributed to the elimination of air pressure during the packaging process (Shirvani et al. 2023). The phenomenon has the potential to impact the sensory perception and overall consumer reception of the fruit.

Furthermore, the process of vacuum packaging imposes limitations on the interchange of gases, hence potentially affecting the respiration rate and metabolic activity of the fruit. This phenomenon may lead to modified ripening mechanisms and probable degradation of flavor and fragrance constituents (Chandra et al., 2018). According to Wu (2000), the color stability of specific fruits can be influenced by the lack of oxygen in vacuum packaging. In addition, the process of vacuum packaging necessitates the utilization of specialized machinery to establish and sustain the hermetic seal the leads to intricacy and increasing expenses to the packaging procedure (Pacifici et al., 2008).

Modified Atmosphere Packaging (MAP):

Modified Atmosphere Packaging (MAP) involves modifying the composition of the air inside the packaging to extend the shelf-life of the product (Birania et al., 2022). MAP is commonly used for fresh produce such as lettuce, mushrooms, broccoli, and carrots (Wan-Mohtar et al, 2019). It involves removing some of the oxygen from the packaging and replacing it with nitrogen and carbon dioxide, which slows down the ripening process and prevents the growth of bacteria (Han et al., 2018). Although MAP has the potential to prolong the shelf life of products, it is important to note that it does not completely eradicate all bacterial growth (Wan-Mohtar et al, 2019). Hence, it is imperative to employ alternative preservation techniques.

The drawback from using MAP is its potential to induce the development of off-flavors and a decline in fruit color, as noted by Sanz et al. (1999). The phenomenon has the potential to exert a detrimental influence on the sensory attributes of the fruit, hence diminishing its overall appeal among consumers. Furthermore, the utilization of specific packing materials in modified atmosphere packaging (MAP), such as polypropylene, has the potential to generate an unfavorable modified atmosphere, which can lead to physiological abnormalities in the fruit (Wan-Mohtar et al., 2019).

Biodegradable Packaging:

Biodegradable packaging is a sustainable option for agricultural products. It is made of materials that decompose naturally over time, reducing the impact on the environment. Biodegradable packaging can be made of materials such as plant-based plastics, cornstarch, and paper (Rodrigues et al., 2021). It is an excellent option for products that require short-term storage, such as fresh produce (Ai et al., 2021). But biodegradable packaging may have lower barrier qualities (Otoni et al., 2017). Increased permeability to gases like oxygen and carbon dioxide can alter the packaging's modified atmosphere. The changed environment controls fruit respiration and ethylene production, which affects shelf life and quality (Otoni et al., 2017). Thus, biodegradable packaging may require additional efforts to sustain the changed environment.

Biodegradable packaging may have lesser mechanical strength and durability than plastic packaging (Rodrigues et al., 2021). Due to increased danger of damage or puncture during handling and transit, fruit deterioration and waste may increase. Thus, choosing biodegradable packaging materials with enough mechanical strength and fruit protection should be carefully considered. Biodegradable packaging may cost more than plastic (Ai et al., 2021). Complex biodegradable material manufacture and processing require specialized equipment, which might raise production costs (Ai et al., 2021, Birania et al., 2022).

METHODOLOGY

To answer the stated objectives, this research used a quantitative survey that involved primary data collection. Based on convenience sampling technique, the determination of the sample size was selected using the Krejcie and Morgan 1970 method. A total of 386 respondents (consumers) were selected from supermarkets that sell agricultural products using premium packaging. Other types of respondents who participated in this research were 54 wholesalers who use premium packaging for their agricultural products.

A descriptive survey questionnaire was established as a research instrument in this research. The questionnaire was developed and consisted of 2 sets of questions. Set 1 involved questions on the use of premium packaging on agricultural products where open-ended, ranking and a 5-Likert scale questions were asked. Meanwhile, set 2 was established for surveys of consumers and their willingness to pay for premium packaging of agricultural products where open-ended and a 5-Likert scale questions were asked. The questionnaires were distributed to the respondents for pre-test for validating the survey instrument (n=15) and pilot test (n=30 samples) for the full rehearsal and their responses were obtained through face-to-face interview sessions. In addition, the online survey method was also used to achieve the target number of actual data collections (Chirilli et al., 2022). The data obtained was analyzed using descriptive analysis, ANOVA, and SWOT analysis based on the objective of the research and type of data. ANOVA was also carried out to determine the willingness to pay for premium packaging for agricultural products among consumers.

RESULTS

Sociodemographic Profiles of Respondents

A total of 386 respondents participated in the first set of questionnaires for this study. Table 1 shows the socio-demographic profiles of the respondents (consumers). Majority of the respondents (32.6%) were female, between the age of 31 to 40 years old. Malays represented the highest ethnicity with 84.5% and most of them have the degree as the highest education level. The respondents were mostly from the household income of RM1,501 to RM3,000 and RM3,001 to RM6,000 with 27.7% and 27.5% respectively.

Table 1: Sociodemographic Profiles of Respondents (Consumers)

Sociodemographic profiles	Frequency (n)	Percentage (%)
Age		
Less than 20 years	2	0.5
21-30 years	124	32.1
31-40 years	126	32.6
41-50 years	99	25.6
More than 51 years	35	9.1
Gender		
Male	128	33.2
Female	258	66.8
Ethnic		
Malay	326	84.5
Chinese	26	6.7
India	28	7.3
Bumiputera Sarawak	6	1.6
Educational level		
Primary school	6	1.6
Secondary school	20	5.2
Certificate	16	4.1

Diploma	51	13.2
Degree	178	46.1
Master	59	15.3
PhD	56	14.5
Household income (RM/month)		
Less than RM1,500.00	23	6.0
RM1,501.00 - RM3,000.00	107	27.7
RM3,001.00 - RM6,000.00	106	27.5
RM6,001.00 - RM9,000.00	87	22.5
RM9,001.00 and above	59	15.3

There were 54 respondents (wholesalers) for premium packaging types who responded to the survey for Set 2. Table 2 shows the socio-demographic profiles of wholesalers who used premium packaging on their agricultural products. Most of the respondents are male with 83.3 percent and 16.7 percent are female.

Table 2: Sociodemographic Profiles of Respondents (Wholesalers)

Sociodemographic profiles	Frequency (n)	Percentage (%)
Gender		
Male	45	83.3
Female	9	16.7
Age		
Less than 20 years	9	16.7
21-30 years	15	27.8
31-40 years	21	38.9
41-50 years	9	16.7
More than 51 years	9	16.7
Ethnic		
Malay	18	33.3
Chinese	30	55.6
India	6	11.1
Educational level		
Secondary school	9	16.7
Certificate	30	55.5
Diploma	3	5.6
Degree	12	22.2
Type of business		
Retailers	12	16.0
Wholesalers	45	60.0
Exporters	6	8.0
Importers	12	16.0

The results showed in Table 3 the percentage of agricultural products using premium packaging. Based on observations, premium packaging for fruits was not only done for small-sized fruits, but also large-sized fruits. The commonly packed vegetables using premium packaging were revealed to be tomato and celery leaves.

Table 3: Agricultural Products Packed using Premium Packaging.

Agricultural products	Frequency (n)	Percentage (%)
<i>Fruits</i>		
Red/green apple	45	27.3
Orange	27	16.3
Banana	21	12.6
Durian	18	10.9
Lai/Pear	18	10.9
Watermelon	9	5.5
Papaya	9	5.5
Lemon	9	5.5
Strawberry apple	9	5.5
<i>Vegetables</i>		
Tomato	27	16.0
Celery leaves	27	16.0
Aubergine	18	10.6
Carrot	18	10.6
Bean	9	5.4
Capsicum	9	5.4
Spinach	9	5.4
Salad	9	5.4
Onion leaves	9	5.4
Japanese cucumber	9	5.4
Mix salad	9	5.4
Parsley	9	5.4
French beans	6	3.6
<i>Flowers</i>		
Rose	9	3.3
Orchid	9	3.3
Sunflower	9	3.3
<i>Other commodities</i>		
Coffee bean	3	100.0

Note: The number of premium packaging types of agricultural products is based on this study sample only.

Table 4 to Table 6 show the types of agricultural products, types and materials of premium packaging, and costs of premium packaging for fruit products. The cost of premium packaging for each type of fruit varies according to the type of packaging material- used. The results revealed that the average cost of sold/unit price (RM) depends on the type of packaging and materials used. Premium packaging for fruits was varied among them if the premium packaging for small fruit is in biodegradable boxes/plastics, polystyrene wraps nets, boxes, and premium plastics.

Table 4: Types of Material used for Premium Packaging (Fruits)

No.	Types of fruits	Types of premiums packaging	Types materials	Average premium/unit packaging cost (RM)	Average sale/unit price (RM)
1	Papaya	Plastic	Plastic	0.50	10.00
2	Durian	Foam	Nylon pack	20.00	200.00
		Plastic basket	Paper	10.00	80.00
3	Green apple	Plastic wrapping film biodegradable/ plastic	Box/span/ polystyrene	5.30	10.00
4	Red apple	Plastic transparent/ biodegradable	Box/paper/ plastic paper	1.50	10.00
5	Lemon	Plastic	Paper or biodegradable plastic	3.00	11.00
6	Orange	Plastic	Box/paper/ plastic paper	1.50	60.00
7	Pear	Plastic	White net/box	1.50	60.00
8	Cavendish bananas	Plastic transparent/ biodegradable	Plastic sponge	1.30	7.00
9	Apple strawberry	Plastic	Plastic	5.00	76.00
10	Watermelon	Plastic	Plastic	0.50	10.00
11	Lai	Plastic paper Eco film	Plastic	5.00	9.00

Table 5 shows the type of agricultural products, types and materials of packaging, and the cost of premium packaging for different types of vegetables. The premium types of packaging for vegetables are plastic, either biodegradable plastic or transparent plastic. The cost of packing vegetables is cheaper when compared to premium packaging for fruits. The cost of premium packaging for each type of vegetable also varies according to the type of packaging material used.

Table 5: Types of Material used for Premium Packaging (Vegetables)

No	Types of vegetables	Types of premium packaging	Types of materials	Average premium/unit packaging cost (RM)	Average sale/unit price (RM)
1	Spinach	Plastic	Plastic	0.50	4.50
2	Spring onion	Plastic	Plastic	0.50	3.90
3	Celery leaves	Biodegradable plastic	Plastic	2.50	7.00
4	Parsley	Plastic	Plastic	0.50	3.80
5	Carrots	Plastic wrapping film	Plastic	2.50	9.50

		biodegradable/clear plastic			
6	Ginger	Plastic wrapping film biodegradable/clear plastic	Plastic	2.50	5.00
7	Peanut shoots	Transparent plastic container	Plastic	0.50	3.00
8	Salad	Transparent plastic/ biodegradable	Plastic	2.50	5.30
9	Mixed salad	Starch bag	Plastic	3.00	13.90
10	Aubergine	Plastic or transparent plastic	Plastic	0.50	4.20
11	Japanese cucumbers	Transparent plastic	Plastic	0.50	5.00
12	Tomatoes	Paper box	Plastic	1.00	7.50

The cost of premium packaging for each type of flower is found to be almost similar (Table 6). The premium packaging type used for flowers is transparent plastic/biodegradable. According to wholesalers, this transparent plastic is more suitable for flower wraps as it can portray the physical appearance of the flowers.

Table 6: Types of Materials used for Premium Packaging (Flowers)

No	Types of Flowers	Types of premium packaging	Types of materials	A	Average sale/unit price (RM)
1	Rose	Transparent plastic/ biodegradable/Paper	Plastic	5	50.00 to 100.00
2	Orchid	Transparent plastic/ biodegradable	Plastic	5	50.00 to 100.00
3	Sunflower	Transparent plastic/ biodegradable	Plastic	5	50.00 to 100.00

Packaging innovations are aimed at improving resource efficiency, eliminating waste, and reducing environmental impacts through improved design and the use of alternative materials. There are four (4) types of technological and innovative packaging listed for this study as follows: i) Active packaging; ii) Biodegradable; iii) Vacuum packaging and iv) Shrink wrapping. Table 7 shows respondents who used technological/innovative packaging in their products. The findings showed that 62.0 percent of respondents expressed interest in the type of biodegradable packaging. However, it requires a proper method of disposal. Next, 16.0% of the respondents expressed interest in active packaging and vacuum packaging. The type of shrinking wrapping packaging technology (Shrink wrapping) showed the lowest interest in respondents at 7.0%.

Table 7: Wholesaler's Interest in using Technology/Innovative Packaging.

Types of packaging	Percentage (%)
Active packaging	15.5
Biodegradable	62.0
Shrink packaging	7.0
Vacuum packaging	15.5

Table 8 shows the wholesalers' view of the effects of premium packaging using technological and innovative materials. All respondents (100.0%) believed that the demand for agricultural products is increasing, the design of attractive packaging and increasing marketing are the three (3) main effects of premium packaging using technological and innovative materials. While most wholesalers stated that maintaining the freshness of agricultural products, the durability of agricultural products and the

quality of agricultural products were among the other effects of using premium packaging, with 88.9% and 83.3% respectively. However, 77.8% of wholesalers said the use of technology and innovative packaging impacted the increase in packaging costs.

Table 8: Wholesaler's View on the Impact of Premium Packaging using Technological and Innovative Materials.

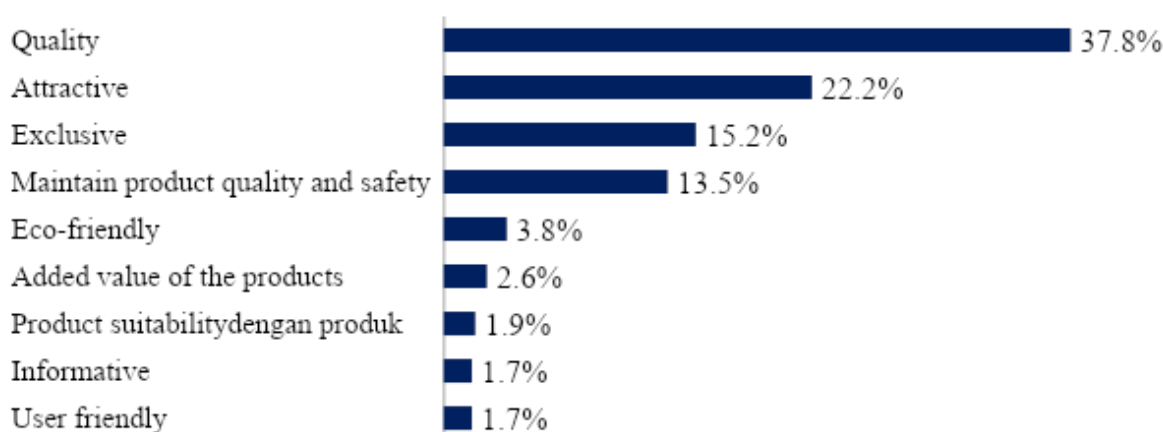
Impact of using premium packaging	Positive (%)	Negative (%)
Demand for agricultural products is increasing	100	-
Design of attractive packaging	100	-
Increase marketing	100	-
The freshness of agricultural products	88.9	11.1
Durability of agricultural products	88.9	11.1
Quality of agricultural products	83.3	16.7
Packaging cost	22.2	77.8

Consumers' Perspective on Premium Packaging

This section is related to the awareness and views of consumers on the types of premium packaging for fresh agricultural products sold in the market. The majority of 85.0% of consumers are interested in buying agricultural products using premium packaging while 15.0% are not interested in buying premium packaging. From that, 40.5% expressed interest in buying premium packaging due to food safety. Similarly, some 20.5% of respondents think food is healthier and fresher used premium packaging compared to common packaging. While the consumers expressed, they were not interested in buying premium packaging agricultural products because they are expensive and a waste of money.

The definition of premium packaging according to the perspective of consumers was analysed using thematic analysis. It shows in Figure 1 that 37.8% of consumers define premium packaging as quality packaging, 22.2% of consumers think premium packaging is attractive packaging and 15.2% of luxury packaging. Additionally, 13.5% of consumers understand the definition of premium packaging as maintain of product quality and safety. In addition, consumers also defined premium packaging as eco-friendly packaging (3.8%), added value of the products (2.6%), product suitability (1.9%), informative (1.7%) and user-friendly (1.3%).

Figure 1: Percentage of Consumers' Views on Premium Packaging



Market Segment for Premium Packaging of Agricultural Products

From this study, 85.0% of consumers are interested in buying agricultural products using premium packaging while 15.0% are not interested in buying premium packaging. It shows that 40.5% expressed interest in buying premium packaging due to food safety. Similarly, some 20.5% of respondents think food is healthier and fresher if used premium packaging compared to common packaging. While respondents said they were not interested in buying premium packaging agricultural products because they are expensive and a waste of money.

The agricultural products market using premium packaging described in terms of age, race, education level, the estimated income of respondents, estimated household income, number of households and location of agricultural products using the premium packaging. From the overall respondents, there is a large market for the use of premium agricultural packaging especially for Malay consumers with a frequency of 289 and consumers aged from 21 to 30 years and from 31 to 40 years with frequencies of 117 and 101 respectively.

The result showed that the premium agricultural packaging market can be expanded for the consumers with the income range RM1,500 to RM3,000 and RM3,001-RM6,000. Meanwhile, there is a good market for premium agricultural packaging for consumers with a household volume of 1 to 3 people and 4 to 6 people. Besides, the premium agricultural product packaging market is more extensive for consumers who work- in government and private rather than students and self-employed.

Figure 2 shows the stores where premium packed agricultural products can be found. A total of 64.5% of consumers were from the Village Grocer supermarkets, followed by Jaya Grocer supermarkets (62.2%), Cold Storage (61.4%) and Aeon (58.3%). While 28.0 percent of respondents are at the Lotus supermarket and less than 15.0 percent said they are available in other stores (Mercato, Mydin, Lulu and Hero) and online platforms (Mydin, Lotus, Cold Storage and others).

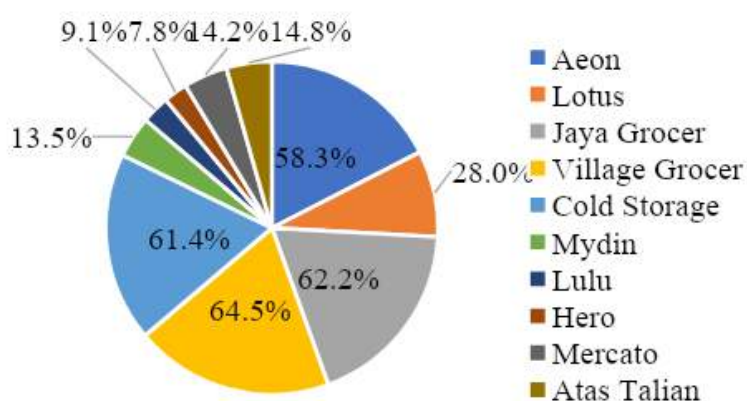


Figure 2: List of Supermarkets that Market Premium Packaging Vegetables and Fruits

Consumers' Awareness Towards Premium Packaging

The study also assessed the consumers' awareness of premium packaging (Table 9). Awareness in general means knowledgeable being conscious, cognizant, and informed alert. Awareness is the state or ability to perceive, to feel, or to be conscious of events, objects, or sensory patterns. At this level

of consciousness, sense data can be confirmed by an observer (Kunnathodi et. al, 2012). 69.7% of consumers said they were aware of the existence of premium packaging for fruits and vegetables. While 49.2% of consumers knew that premium packaging for fruits and vegetables is very easy to obtain in certain supermarkets.

In addition, 80.6% of consumers thought the price of premium-packed fruits and vegetables are more expensive than the common type of packaging. While 53.1% of consumers are aware that there is a promotion of fruits and vegetables using premium packaging in the store and this indirectly increases their intention to purchase. Premium packaging is not only available in physical stores but also available with purchase through online platforms (Wang et al.,2019).

Table 9: Consumers' Awareness of Premium Packaging for Fruits and Vegetables

No.	Consumers' awareness criteria	Less aware	Moderate aware	Aware
1	Aware of the existence of premium packaging for fruits and vegetables	10.9%	19.4%	69.7%
2	Premium packaging for fruits and vegetables is extremely easy to obtain.	24.4%	26.4%	49.2%
3	Premium packaging for fruits and vegetables is more expensive compared to common packaging.	8.3%	11.1%	80.6%
4	There is a promotion of fruits and vegetables using premium packaging.	22.3%	24.6%	53.1%

The Willingness to Pay for Premium Packaging.

Willingness to pay (WTP) is the maximum amount of money a customer is willing to pay for a product or service (Encyclopedia of Environmental Health Second Edition (2019). Agriculture product packaging enhances consumer willingness to pay (WTP) for premium packaging. From the findings, the respondents were willing to pay a high value for the durian fruit premium packaging of RM202.00. Consumers expressed their willingness to pay for premium packaging for vegetables such as carrots, soup leaves and coriander leaves, as the vegetables quickly rot and wither. In addition, some respondents also expect the concept of premium, affordable goods should be prioritized to attract more customers. The average willingness to pay by the consumers for other fruits and vegetables is as per Table 10 and Table 11.

$$\text{Average willingness to pay (WTP) (RM)} = \frac{\text{Total willingness to pay for premium packaging (RM)}}{\text{Total of respondent willingness to pay for premium packaging}}$$

Table 10: Consumers' Willingness to Pay for Products Packed using Premium Packaging (Fruits)

No	Types of fruits	Minimum (unit/pack)	Maximum (unit/pack)	Average willingness to pay
1	Watermelon	RM 10.00	RM 80.00	RM 27.00
2	Melon	RM 25.00	RM 130.00	RM 56.00
3	Starfruit	RM 10.00	RM 50.00	RM 23.00

4	Mango	RM 20.00	RM 100.00	RM 52.70
5	Durian	RM 50.00	RM 300.00	RM202.00
6	Guava	RM 20.00	RM 80.00	RM 30.00
7	Pitaya/Dragon fruit	RM 18.00	RM 100.00	RM 36.00

Table 11: Consumers' Willingness to Pay for Products Packed using Premium Packaging (Vegetables)

No	Types of vegetables	Minimum (unit/pack)	Maximum (unit/pack)	Average willingness to pay
1	Capsicum	RM 4.00	RM 20.00	RM 15.00
2	Tomatoes cherry	RM 5.00	RM 20.00	RM 15.00
3	Japanese cucumber	RM 4.00	RM 20.00	RM 8.00
4	Salad	RM 5.00	RM 15.00	RM 8.00

Besides, based on the ANOVA, there was a significant difference in consumers' WTP ($p\text{-val} < 0.05$) for premium packaging agricultural products where respondents from a household income of RM1,500 - RM 3,000 had a highest WTP on average compared to the different categories of household income except for guava ($p\text{-val} = 0.088$) and melon ($p\text{-val} = 0.058$). (Refer to appendix 1). According to a study by the Malaysian Department of Statistics, households with a monthly income of RM1,500 - RM3,000 made up much of the population in Malaysia in 2019 (Department of Statistics Malaysia, 2020). Therefore, it is essential to understand their preferences towards premium packaging for fruits.

Based on the Tukey test, it was identified that with a household income of less than RM1,500 had a significantly higher willingness to pay for premium packaging for mango fruits compared to other categories with an average price of RM70.00. While consumers from the household's income of RM1,501 to RM3,000 showed a significant low willingness to pay for mango premium packaging at an average price of RM35.40. As for the premium packaging of watermelon, consumers with a household income of less than RM1,500 also have a higher willingness to pay for watermelon premium packaging compared to other household income categories with an average price of RM45.00. The consumers in the household income of less than RM1,500 have a willingness to pay higher with an average price of RM28.25 for jackfruit. Meanwhile, those in the household's income of RM1,501 to RM3,000 showed significant low WTP compared to all other household income categories except the RM9,001 category and above to pay for the premium packed jackfruit at an average price of RM19.00. Consumers with a household income of RM1,501 to RM3,000 showed the highest willingness to pay for the premium packaging of durian fruits when compared to the household income category with an average price of RM213.15. However, consumers earning RM9,001 and above showed the lowest WTP for premium packaging of durian fruits at an average price RM183.70. For the premium packaging of dragon fruit, with the income of less than RM1,500 showed the highest willingness to pay at RM74.50. The willingness to pay for the premium packed dragon fruit are the consumers in households' income of RM9,001 and above with an average price of RM36.25.

For the willingness to pay for premium packaging of vegetables, consumers with a household income of less than RM1,500 have a much higher willingness to pay for capsicum, cherry tomatoes, Japanese

cucumbers, and salads with an average value at RM26.00, RM21.00, RM16.00 and RM8.00 respectively.

Cross-tabulation Analysis for the Purchasing of Premium Packaged Agricultural Products According to the Number of Households, Employment Status, Education Level and Age.

From the crosstab analysis (Table 12 to table 15), 75.0% of this income group had a small household of 1 to 3 people. This situation causes them to choose premium packaging because the quantity requirements for such products are few. Besides that, the majority of respondents are in the household income category of less than RM1,500 with education status at the undergraduate and master's degree levels. Most respondents are in the household income category of less than RM1,500 with education status at the undergraduate and master's degree levels.

Table 12: Cross-Tabulation Analysis for the Purchasing Premium Packaging of Agricultural Products According to the Number of Households

	Number of households			
	1 - 3 person	4 - 6 person	7 - 9 person	More than10 person
Less than RM1,500.00	6	0	2	0
RM1,501.00 - RM3,000.00	56	25	2	2
RM3,001.00 - RM6,000.00	54	40	10	0
RM6,001.00 - RM9,000.00	26	44	0	0
RM9,001.00 and above	28	80	9	2

Table 13: Cross-Tabulation Analysis for the Purchasing Premium Packed of Agricultural Products According to the Employment Status.

	Employment status						
	Self Employment	Government	Private	Students	Retired	Housewife	Unemployment
Less than RM1,500.00	0	0	2	6	0	0	0
RM1,501.00 – RM3,000.00	7	21	40	4	2	7	2
RM3,001.00 – RM6,000.00	6	33	54	4	2	3	0
RM6,001.00 – RM9,000.00	0	23	42	2	3	0	0
RM9,001.00 and above	0	89	24	2	0	4	0

Table 14: Cross-Tabulation Analysis for the Purchasing Premium Packaging of Agricultural Products According to the Educational Level

Households' income	Educational level						
	Primary school	Secondary school	Certificate	Diploma	Degree	Master	PhD
Less than RM1,500.00	0	0	0	0	4	4	0
RM1,501.00 – RM3,000.00	0	6	4	9	62	4	0

RM3,001.00 – RM6,000.00	6	6	6	22	48	6	10
RM6,001.00 – RM9,000.00	0	6	6	16	28	8	6
RM9,001.00 and above	0	2	0	4	36	37	40

Table 15: Cross-Tabulation Analysis for the Purchasing Premium Packaging of Agricultural Products According to the Age

Households' income	Age				
	Less than 20 years	21-30 years	31-40 years	41-50 years	More than 51 years
Less than RM1,500.00	0	4	2	2	0
RM1,501.00 - RM3,000.00	0	54	20	2	9
RM3,001.00 - RM6,000.00	0	38	35	23	8
RM6,001.00 - RM9,000.00	0	13	27	23	7
RM9,001.00 and above	2	15	42	49	11

SWOT ANALYSIS

According to American Marketing Association (AMA), SWOT analysis assesses both the internal and external factors which are the strengths, weaknesses, opportunities, and threats. Strengths and weaknesses are of the internal, while opportunities and threats are of the external. These factors are contributed by facts to recognize trends and conditions with the prospective to affect business and the selection of strategies to be implemented. It incorporates the four major elements to boost strength, benefit from opportunities, deal with external issues, avoid threats, and minimize weaknesses (DeSilets & Lynore, 2008). The SWOT analysis for these studies includes:

Strength	Weakness
<ul style="list-style-type: none"> ● The strength of premium packaging is that this packaging is more appealing to consumers. The unique, beautiful, quality and easy-to-carry premium packaging features open opportunities for agricultural products to be marketed more easily and can penetrate the overseas market. ● The advantage of premium packaging is the consumers have a high willingness to pay for agricultural products that use this packaging. ● Among the functions of premium packaging is to increase durability, and maintain the freshness and quality of agricultural products, thus attracting consumers to purchase and can increase sales of the country's agricultural products. 	<ul style="list-style-type: none"> ● The demand for premium packaging is still focused on certain groups as this premium packaging is only available in some supermarkets. ● The limited use of technology causes this premium packaging to still be done manually. This situation causes errors in grading.

<ul style="list-style-type: none"> ● Premium packaging can also save consumers time to make purchases as there is no need to weigh and get prices for agricultural products. This is because the premium packaging is ready to be weighed and the price tag. 	
Opportunities	Treats
<ul style="list-style-type: none"> ● Manufacturers can turn to the use of technology for premium packaging (e.g., the use of QR codes, modified atmospheric packaging, active packaging/smart packaging, and biodegradable, and edible packaging) to add value to the goods. ● Premium packaging can increase the value added to agricultural products through attractive packaging design changes, ease to carry and high esthetic value resulting in the value of the product is increased and expanded. ● Premium packaging contains information such as myGAP, HACCP and myOrganic as well as healthy eating as a guide to consumers. 	<ul style="list-style-type: none"> ● Premium packaging material is still expensive and needs to be imported. This has resulted in the cost of packaging still being high. ● Premium packaging in the country still uses less technology, such as active packaging and smart packaging, biodegradable and edible packaging compared to the use of packaging technology in other countries such as Thailand and the Philippines. This situation may cause a shift in consumer demand for agricultural products from foreign countries as premium packaging is more attractive. ● Local premium packaging also has less information about the products marketed compared to other countries. Information about the product is important for consumers who care about their dietary diet and the source of their food.

DISCUSSIONS

As for the premium packaging, it was identified that premium packaging managed to attract the attention of consumers as 85% of the consumers were interested in buying agricultural produce using premium packaging. Consumers defined premium packaging as the type of packaging that has good quality assurance for the fruits. Reviewing the willingness of consumers to buy agricultural produce in premium packaging, the study found that low-income consumers are more likely to buy premium agricultural products, especially for a small household size and do not require a large amount of consumption. Furthermore, households with lower to middle-income levels are also likely to purchase fruits that are ready-to-eat and convenient to consume on-the-go due to their busy lifestyles (S. Sulaiman & Hassan, 2020). According to a study conducted by Pechinthorn et al. (2021), empirical evidence suggests that individuals with lower incomes can exhibit brand consciousness and place importance on the perceived quality associated with premium brands. Therefore, premium packaging solutions that provide convenience, such as clear plastic containers with snap-on lids and attached spoons, may be preferred by households with lower to middle-income levels (Pechinthorn et al. 2021). Most of them are made up of students who may not have a high commitment and this premium packaging has quality of safety features and the food is often fresher.

The demand for premium packaging is still focused on certain groups as this premium packaging is only available in some supermarkets. The limited use of technology causes the local premium packaging to still lack in terms of its functionality and edge (Han et al., 2018). Because a premium image is of critical importance for many consumer goods, it is important for both designers and

marketers to have a comprehensive understanding of the package characteristics that can evoke such a premium perception (Just and Goddard, 2022). The present research integrates knowledge from design research and marketing research to enhance the understanding of the role of packaging design in shaping consumers' product perceptions (Ahmed et al., 2022, Babalis et al., 2013). Consideration when designing a premium packaging could be four premium cues (extraordinary differentiation, high quality of packaging materials, minimalistic design, and authenticity) as important guidelines (Romeo-Arroyo et al., 2023). When these premium cues are implemented in a packaging design, consumers will recognize the product as a superior, high-quality product that is worth a higher price (Romeo-Arroyo et al., 2023).

Manufacturers can turn to the use of technology for premium packaging (e.g., the use of QR codes, modified atmospheric packaging, active packaging/smart packaging, and biodegradable, and edible packaging) to add value to the goods. The limited utilization of technology in fruit packaging within the context of Malaysia can be ascribed to various contributing variables. The use of modern packaging technologies in the fruit packaging business has been impeded by the restricted technology transfer carried out by multinational corporations (MNCs) (Lebdioui et al., 2020). The transfer of technology in Malaysia has been limited due to the interface between local and foreign technologies, as well as the development of resources, as discussed by Lebdioui et al. (2020).

Moreover, the significance of governmental involvement in facilitating the implementation of sustainable technology within the small and medium-sized firm (SME) sector in Malaysia is of utmost importance (Bakar et al., 2020). The adoption of innovative technologies, particularly in the field of fruit packing, is significantly influenced by government regulations and subsidies (Bakar et al., 2020). The deployment of technology in different industries, such as fruit packaging, has been affected by the COVID-19 epidemic and the implementation of the Movement Control Order (MCO) in Malaysia (Zaini et al., 2021). During periods of crisis, microenterprises encounter difficulties in maintaining their commercial operations and allocating funds towards technological improvements due to limited financial resources and capital (Zaini et al., 2021).

The underdevelopment of certain fruit crops, such as passion fruit, in Malaysia has contributed to the limited use of technology in fruit packaging for these specific fruits (Nor et al., 2022). Premium packaging can increase the value added to agricultural products through attractive packaging design changes, easy to carry and high esthetic value resulting in the value of the product being increased and expanded. Premium packaging also contains information such as myGAP, HACCP and myOrganic as well as healthy eating as a guide to consumers.

Key Recommendation to the Premium Packaging of Agricultural Products in the Supply Chain of Agricultural Products:

In Malaysia, the use of technology in packaging is still not heavily applied. By expanding the use of technology and innovation for premium packaging, (e.g., MAP, active packaging, biodegradation, edible packaging, vacuum packaging, and concussion packaging) agricultural products not only look luxurious and attractive but also can also be informative, increase durability, maintain freshness and quality of agricultural products.

Premium packaging should be attractive and easy to carry for the consumers to increase the value of the product. It is also one of the ways to market products indirectly. Attractive packaging in terms of design and color selection can also attract buyers. In addition, premium packaging can also improve the quality of goods, especially to make them look attractive.

Overall, it gives the impression that the demand for premium packaging agricultural products is high, and it is necessary to increase local agricultural products that use premium packaging with useful information for consumers such as nutrition, origin, and user-friendly information. Malaysia has competition with other countries that export agricultural products using premium packaging. High demand in the market requires a bigger number of packaged agricultural products that attract the attention of consumers.

Premium packaging should provide and improve information (such as the origin of the product, myGAP, HACCP and myOrganic) on the premium packaging of local agricultural products in a more complete and detailed manner to increase consumer demand and expand the market. Although the cost of premium packaging is quite high, the level of willingness of consumers to purchase agricultural products using premium packaging is also quite high.

Typically, the local premium-packed agricultural product consists of a small unit of products. Consumers' willingness to pay more is from the low-income group, especially for students and small-sized families that may have small consumption. Therefore, the premium packaging revenue market can be expanded in rural supermarkets as it has demand.

IMPLICATIONS

Managerial Implications

This study that aiming assessing premium packaging for fruits in terms of its material, cost, consumers awareness and willingness to pay can provide valuable insights for managers to make informed decisions on consumer preference about the price of the fruits, competitive advance, packaging materials and design and brand image. The study can help managers to understand customer preferences for premium packaging and whether they are willing to pay a premium price for it. They can also determine which types of customers are more likely to buy premium packaged fruits and tailor their marketing strategies accordingly. The study can help managers to identify the key features of premium packaging that customers find attractive, such as esthetics, convenience, and sustainability. They can then use this information to design packaging that meets these criteria and stands out in the market. Premium packaging can give a company a competitive advantage by differentiating its products from those of its competitors. The study can help managers to assess whether premium packaging is a viable strategy for gaining a competitive edge and whether it is sustainable over the long term and what are suitable markets accordingly.

CONCLUSION

Packaging plays an important role in maintaining quality, reducing damage, and ensuring safety in the supply chain of agricultural products to remain fresh, from harvest to market and recently has become a marketing tool to attract consumers. Various types of agricultural packaging have been used in the market. Agricultural products in Malaysia were identified to be using premium packaging to market their agricultural products. Most premium packaging uses more attractive packaging designs with smaller packaging sizes. The use of innovative packaging technologies such as active packaging, smart packaging, and edible packaging is still limited and has not been widely used. The usage of premium packaging has received positive feedback, especially as the demand for the product is increasing and the products have become more attractive to sell. Consumers in Malaysia were identified found to be aware of the premium packaging used for the agricultural products and majority of the consumer (85.0%) are interested in buying agricultural products using premium packaging. The market for these products can be expanded to a wider market according to the household income (RM1,500 to RM3,000 and RM3,001-RM6,000). This study can inform the designers on type of packaging and material commonly used for agricultural product premium packaging and subsequently are able to increase the competitiveness of local agricultural products.

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