

ABSTRAK

Projek ini mengkaji tentang elemen fizikal pembungkusan produk dan modifikasi pembungkusan produk berdasarkan respon pengguna dalam aspek komunikasi jenama. Komunikasi ini berlaku setiap kali pengguna berinteraksi dengan sesuatu jenama. Dalam projek ini, Pembungkusan beras dipilih sebagai produk untuk dikaji. Elemen fizikal pembungkusan beras yang dibincang dan dikaji dalam projek ini adalah warna, bentuk, bahan, grafik, informasi pemakanan, saiz dan kaedah penyimpanan selepas dibuka. Objektif pertama dicapai melalui kajian pasaran I menggunakan kaedah penyelidikan kuantitatif. Keputusan yang didapati digunakan untuk membuat modifikasi atas reka bentuk pembungkusan beras berdasarkan respon pengguna. Dalam proses ini, lapan konsep reka bentuk telah dihasilkan daripada carta morfologi berdasarkan tujuh elemen fizikal pembungkusan beras. *AHP*, *TOPSIS* dan *Pugh Matrix* digunakan untuk memilih konsep reka bentuk yang terbaik. Konsep reka bentuk 6 dipilih sebagai konsep yang terbaik dan *Adobe Illustrator* digunakan untuk mereka bentuk konsep ini secara terperinci. Untuk menganalisa keberkesanan pembungkusan baru beras yang telah dimodifikasi dalam aspek komunikasi jenama yang merupakan objektif ketiga, kajian pasaran II telah dijalankan menggunakan kaedah penyelidikan kuantitatif. Keputusan dari kajian pasaran II telah membuktikan bahawa pembungkusan beras yang baru adalah lebih baik daripada pembungkusan beras yang biasa dari segi komunikasi jenama. Kesimpulannya, ketiga-tiga objektif projek ini telah dicapai.

ABSTRACT

This project studied about physical elements of product packaging and modification of product packaging based on consumer responses in brand communication. Brand communication happens every time consumer interacts with a brand. In this project, rice packaging is selected as product to study. Physical elements of rice packaging that are discussed and researched in this project are colour, shape, material, graphics, nutritional information, size and storage method after unpack. The first objective is achieved by market survey I using quantitative research method. The results obtained are used to modify the design of rice packaging according to consumer's response. In the modification state, eight design concepts are generated from morphological chart based on seven physical elements of rice packaging. AHP, TOPSIS and Pugh Matrix are used to select the best design concepts. Design concept 6 is selected as the best design and Adobe Illustrator is used to generate the detailed design of this concept. To analyse the efficiency of modified rice packaging in brand communication which is the third objective, market survey II is conducted using quantitative research method. The outcome of market survey II has proved that the modified rice packaging is better than normal rice packaging in terms of brand communication. In a nutshell, all three objectives of the project are achieved.

DEDICATION

Only

my beloved father, Cheang

my beloved mother, Kee

my beloved siblings, Yee, Hui and Yen

for giving me physical, financial and mental support and also understandings

Thank You So Much and Love You All Forever

ACKNOWLEDGEMENT

Firstly, I would like to express my gratitude to my respected supervisor, Dr. Rosidah bt. Jaafar who has guided me throughout the project. The advice and support given have motivated me in completing this project.

Next, I would like to thank my friends who are also my course mates for their support throughout this project. I would like to thank Larry Page and Sergey Bin for created the best search engine that helped me a lot in exploring and researching information relating to my project.

Last but not least, I would like to express my gratitude to everyone who has directly or indirectly helped me and physically or mentally supported me during this project.

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LIST OF ABBREVIATIONS

FMCG	-	Fast Moving Consumer Goods
SPSS	-	Statistical Package for the Social Science
CRs	-	Customer Requirements
TRs	-	Technical Requirements
AHP	-	Analytical Hierarchy Process
ANC	-	Average Normalised Column
TOPSIS	-	Technique for Order Preference by Similarity to an Ideal Solution
LDPE	-	Low Density Polyethylene
HDPE	-	How Density Polyethylene

CHAPTER 1

INTRODUCTION

This is the first chapter where a brief explanation of this project is included. The background of the study is presented first followed by problem statement. Thereafter, objectives that are identified from problem statement of this study will be discussed. The scope specifies the area of the study and finally, significance of this study will be presented before concluding the chapter.

1.1 Background

Packaging is the outer layer of every product with several functions. Functions of packaging range from protecting the product, transporting and warehousing of the product, creating brand image and communicating with the consumers. Serving as one of the most important marketing tool, packaging is also protective tool of products. In the past, packaging was intended to enable easy distribution of products from manufacturers and growers to stores before reaching consumers. It is used to preserve food products for longer period and to minimise bacteria contamination. According to Risch (2009), three primary functions of packaging are protection, utility and communication in three environments which are physical, atmospheric and human.

The need of containers to store food increase dramatically as people shifted from a nomadic lifestyle to sedentary lifestyle. The development of new manufacturing processes and

new materials rises during the Industrial Revolution. Materials like metal cans, glass bottles, paperboard and plastics were used widely as food packaging materials. After World War II, the awareness of food quality and food security arose. Developments on food quality, packaging processes and packaging materials especially plastic have increased tremendously (Risch, 2009).

The role of packaging has extended according to consumers' changing lifestyle. Since less time is spent by consumers to look at detail and information on packaging especially in fast moving consumer goods (FMCG), a product must be able to stand out from a huge range of product and this makes buyer attraction an important factor in designing a packaging. Packaging is critical in urging purchasing intentions. Recognised as an integral part of modern marketing operation, packaging is important in image and identity communication of a company, provided that it is the first thing public observe before making any purchase (Agariya *et al.*, 2012).

Typically, there are three levels of packaging (Chiellini, 2008):

- i. primary packaging – serves as containment and protection of the product as well as promotion of the product (e.g. glass bottles);
- ii. secondary packaging – encloses and contains the primary packaging (e.g. cardboard boxes and cartons);
- iii. tertiary packaging – assists the transportation of primary and secondary packaging in bulk (e.g. wooden pallets and shrink wrap).

Most of the time, primary packaging is the most important element in brand communication. Brand communication happens every time a customer interacts with a brand. It occurs when customer sees a logo, product or advertisement of a brand. Unlike brand marketing, brand communication is a passive approach to reach out to consumers. A successful brand communication requires long term investment and is able to build brand identity and brand loyalty (Edmonds, 2013).

1.2 Problem Statement

The design of rice packaging in existing market is similar in size and shape. There is no significant changes in design of rice packaging since it was first introduced to the market. According to Rundh (2013), change in household size is affecting the specific food package sizes in terms of volume or weight. Common packaging sizes available in market are 5kg, 10kg and 20 kg. However, the average household size in Malaysia has decreased. According to Population and Housing Census of Malaysia by Department of Statistics, Malaysia, the average family size per private household has decreased from 4.6 persons to 4.2 persons from year 2000 to year 2010 (The Office of Chief Statistician Malaysia, 2014). Rice consumptions of small families or singles are relatively less compare to big families.

Yam and Lee (2012) did a research on food waste and found that inability of gauging correct portion sizes contributes in 39% of avoidable food waste by weight in UK. Consumers tend to “prepared, served or cooked too much” and lead to food waste. Rapid changes of society also suggest that portion sizes need to be smaller not larger (Yam and Lee, 2012). Large package sizes do not facilitate accurate portioning and hard to be reseal, causing food waste. A smaller package, or individual packages are more efficient in reducing food waste.

Besides, suitable size for ease of carrying and storage capacity in home are significant in developing new packaging solutions (Rundh, 2013). Traditional rice packages are less user-friendly. Unpacking of rice package and transferring rice into container is difficult for users. The heavier the rice package, the less ergonomic for it to be carried by users. It can cause back pain to the consumers. In addition, container is needed in order to preserve the rice after it is unpacked. Even though vacuum pack has been introduced in the rice industry to increase shelf life, container is still needed. Improper storage of unpacked rice shortens shelf life as the rice is exposed to contaminants and bugs hence causes health issues.

Nevertheless, limited research and modification have been performed to tackle these problems. Thus, a research will be done on physical elements of rice package and modification will be carried out on design of rice package. Finally, a survey will be conducted to investigate the efficiency in brand communication of both existing and modified designs of rice packaging.

1.3 Objectives

The objectives of this study is stated as below:

1. To determine the impact of physical attributes of rice packaging on consumer's purchasing behaviour;
2. To modify the design of rice packaging according to consumer's response; and
3. To analyse the efficiency of modified rice packaging in brand communication compare to normal rice packaging.

1.4 Scope

There are three levels of packaging: primary packaging, secondary packaging and tertiary packaging. Primary packaging serves as containment and protection of the product as well as promotion of the product (e.g. glass bottles). Secondary and tertiary packaging are related to transportation of primary packaging. This report only consider primary packaging as it is related to brand communication. The role of packaging in brand communication is discussed further in this report.

Physical elements of packaging or packaging attributes of rice packaging included in this report are:

- i. Colour
- ii. Shape
- iii. Size
- iv. Material
- v. Graphics
- vi. Nutritional Information
- vii. Storage method after unpack

Colour, shape, size and graphics are visual elements of a packaging. These elements are important in communicating with rushing consumers who have low involvement in product selection (Silayoi and Speece, 2004). Product information is an informational element which consumers with high-involvement consider before purchasing.

Rice packaging is chosen as product packaging to be studied for this project. Physical attributes of rice packaging are included in market survey and used to design a rice packaging that is better in brand communication compared to normal rice packaging.

The most important thing in brand communication is to know the target market (Alervall and Saied, 2013). Designers often survey about demography of target market to produce a product that is more inviting to consumers. By knowing the target market, designers know which elements to be focused and enhanced. In this project, the target market is young people who aged between 20 to 29 years old. This group of people are those who are away from home for study and work purposes or they have just formed small families. There is no rice package that is specially designed for this group of people in market yet. Thus, the project focused more on this group of people.

1.5 Significance of the Study

The introduction of new rice packaging to the market will draw attention of consumers. Black (2011) stated that packaging is the main marketing element that 100% of customers who buy your product observe. A fresh packaging is the key to gain attention of consumers especially consumers with low-involvement. It is also first step for consumers to approach the product to stimulate brand communication.

Besides, the new design of rice packaging is modified based on consumer response. Opinions and feedbacks regarding preferences of consumers are collected prior to redesign of rice packaging. The modification is then performed according to priority level of each physical element of rice packaging. The new design is able to prompt communication between consumer and brand.

CHAPTER 2

LITERATURE REVIEW

In this chapter, conceptual and empirical researches done by previous researches are discussed. First three subchapters focused on conceptual researches and fourth subchapter focused on empirical researches. Functions of packaging, brand communication and packaging elements are discussed in first three subchapter. Studies conducted by previous researchers are listed and discussed in subchapter four. Research methodologies are introduced in subchapter five. The findings are summarised in sixth subchapter.

2.1 Functions of Packaging

Packaging is a multidimensional construct including marketing, logistics and ethics (Vernuccio *et al.*, 2010). Logistical function of packaging serves as protection for product during distribution to reduce damage or spoilage rate and loss or misplaced goods. According to Risch (2009), three primary functions of packaging are protection, utility and communication in three environments which are physical, atmospheric and human. Packaging must be able to ensure that the content is protected and contained from production floor to final user. Marsh and Bugusu (2007) defined the functions of food packaging as below:

- Protection/ preservation;

- Containment and food waste reduction;
- Marketing and information;
- Traceability; and
- Convenience.

According to Pohtam *et al.* (2016), benefits of packaging development in business are:

- Substantial representation of brand or company;
- Significant improvement of product transportation, experiencing or enjoyment;
- Increased effect at point of purchase; and
- New distribution channels or opportunities.

2.2 Brand Communication

Packaging is an useful tool in marketing mix which often neglected by marketers (Sara, 1990). Conventionally, packaging only serves as protection and transportation tools. However, Calver (2007) said the role of packaging has extended according to consumers' changing lifestyle. According to Farooq *et al.* (2014), packaging is one of the most popular technique adopted by companies to compete with each other and to capture the customer in market. It serves as a powerful marketing tool considering the package elements.

Packaging's outer face that is obvious on-shelf, should engage with consumers, attracting notice and triggering consideration (Giles Calver, 2007). Packaging is responsible to attract customer's attention, to make the product visible and noticeable by customer, to build positive impression and finally to sell the product (Sara, 1990). The right packaging can help a brand sculpt a special position in the market and in the mind of public as it promotes product at the point of purchase and every time the product is used. It is believed to have better reach than advertising and aid in brand identification (Agariya *et al.*, 2012). A well designed packaging is

able to sell itself with messages it conveys by attracting attention and positively communicate with buyers.

Packaging stimulates buying behaviour in a whole package that becomes an ultimate selling proposition. Each package element has different influence on brand communication.

Brand loyalty is the next level marketers want to achieve after successful brand communication. A study conducted by Zehir *et al.* (2011) shows that there is brand trust is affected positively by brand communication. Brand trust has direct effect on brand loyalty.

2.3 Packaging Elements

Packaging elements are categorised into visual and informational elements. Visual elements are related with effective aspect of consumer's decision making process. Under time pressure, visual elements of package have stronger influence. Conversely, informational elements have stronger effect on consumers who are in 'high involvement' level.

2.3.1 Visual Elements

Elements that fall into this category are colour, shape, size, graphics and material. These visual elements are crucial in low involvement products. FMCG are usually treated as low involvement products. It gives strong impact on consumer in decision making where "the package is the product".

2.3.1.1 Colour

Certain colour set different moods and can help to draw attention. Appropriate and vivid picture or packaging colour delivers positive mood. The usage of colour can stimulate a strong connection especially when it is unique to a particular brand. Since people from different

background are exposed to different colour associations, their colour preferences are developed based on their own culture. Marketers must take this into consideration by understanding how colour and colour combinations are perceived in their target regions (Madden *et al.*, 2000).

Colour scheme is an arrangement or pattern of colours conceived of as forming an integrated whole (Lim, 2015) to create style and appeal. Colour scheme is widely used in designing to create aesthetic feeling. Combinations of colours formed using colour scheme lead to colour harmonies which create pleasant and comfortable feeling to viewers. The usage of right colour scheme is crucial in packaging design as it carries message from companies or sellers.

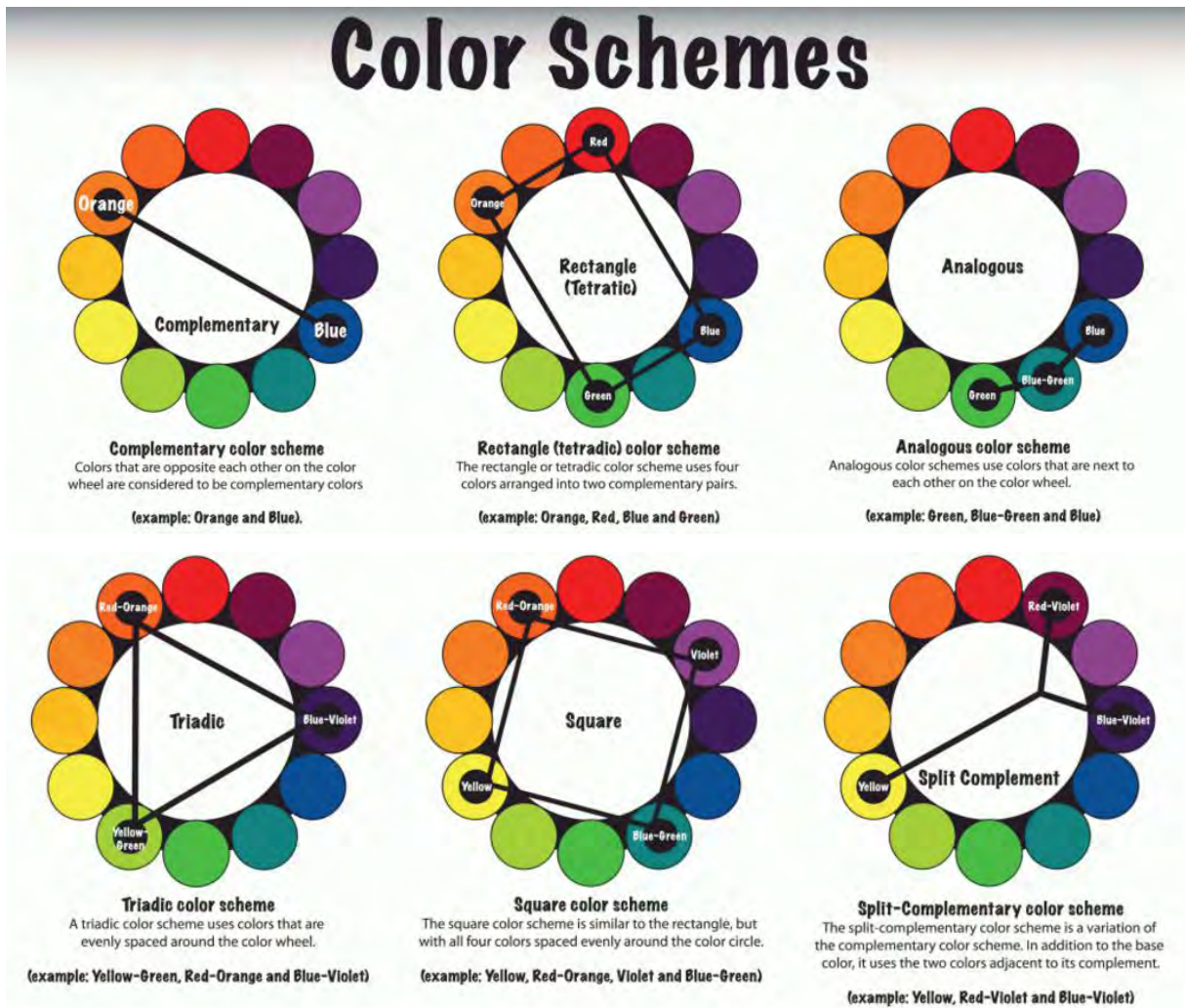


Figure 2.1: Type of colour scheme (Lim, 2015).

These colour schemes form colour harmony as they are harmonious to the eye. It gives people a comfortable and harmonic feeling. There are five types of colour harmony created by colour schemes shown in Figure 2.1 (Lim, 2015):

- Direct harmony/ complementary harmony: This basic harmony is created by two opposite colours on the colour wheel. It is illustrated as “complementary colour scheme” in Figure 2.1 where two opposite colours are complementary to each other. This colour scheme is great to attract attention but it should not be used for text as both colours are “strong” and will fight for attention.
- Analogous harmony: By using “analogous colour scheme”, an analogous harmony can be form. It is one of the basic colour harmonies that is favoured by public as colours used are next to each other. The combination of similar colours creates a serene and comfortable design and also pleasing to eyes.
- Triadic harmony: As presented in “triadic colour scheme” in Figure 2.1, triadic harmony is formed by combination of three evenly spaced colours in the colour wheel. The usage of triadic should be carefully balanced by letting one colour to dominate and another two for accent as too much of each colour might be too vibrant.
- Tetradic harmony: It is formed by combination of four colours which are equally distanced on the colour wheel or as shown in “square colour scheme”. This colour harmony is similar to triadic harmony except that it has an extra colour.
- Split complementary: Slightly different from direct harmony, the split complementary uses two colours next to complementary colour which illustrated in “split-complementary colour scheme”. It covers wider range of colour while still not deviating from basic harmony between key colour and complementary colour. This colour scheme has strong visual contrast similar to complementary colour scheme but more comfortable and relaxing.

Calver (2007) emphasizes on consistent usage of a colour to create brand identity. By using same colour over time, a colour becomes “owned by a brand and when consumers see the colour, they

will think of the brand immediately. The best example for this is Coca Cola with its signature red colour.

2.3.1.2 Shape

Playing as an important role in communicating images that affect consumer preference, shape of a packaging is able to establish desires for the product even before consumer reads the label (Nilsson and Oström, 2005). Raghbir and Greenleaf (2006) found that the ratio of sides of a rectangular package is influential in purchasing behaviour and the effect depends on importance of the product. They also mentioned rather than a particular ratio, consumers prefer a range of contiguous ratios for different context. According to Orth and Malkewitz (2008), packaging appearance is an integral part of a brand's image, for instance the hourglass shape of Coca-Cola bottle.

2.3.1.3 Graphics

Graphics include image layout, colour combinations, typography, and product photography. For low involvement product particularly, first impressions formed initial contact can have lasting effect. As consumers track across a display of packages, outstanding packages is more noticeable among ordinary packages (Silayoi and Speece, 2007). Silayoi and Speece (2004) also said that graphics will at least grab the attention of customers even though they do not have strong preferences towards a brand. Normally, due to unattractive raw state or the need of preservation, the content of a packaging is not visible from outer view. Under this condition, images on packaging serves as surrogate guide for customers inspection (Sara, 1990).

2.3.1.4 Size

Increasing variation of packaging size is an approach for market extension. For smaller family, small-size packaging is preferred over large-size packaging as large packaging is seen

as a waste (Silayoi and Speece, 2004). In contrast, Adam and Ali (2014) stated rate of consumption increases for packages that are large in size. Agariya et al. (2012) found that more options provided in packaging size make products more affordable for consumers with different income level and standard of living. Smaller package is more affordable in developing markets while in developed countries, it is suitable for smaller or single households. Larger packs are suitable in social environment and have lower cost per volume. Yam and Lee (2012) mentioned that food waste in UK are avoidable by designing correct portion size of packaging. The possible solution is shown in Table 2.1. Often, the portion needs to be smaller rather than larger.

Table 2.1: Reason for food waste (Yam and Lee, 2012).

Reason for food waste	Cause	Possible packaging solutions for prevention			
Not used in time (2.5 Mt)	Unopened/whole (24%)	Extended shelf life packaging – more chance of food being eaten	Easy-out packaging – format changes/ smart surfaces to reduce residual food in ‘empty’ packages	Smart labeled packaging – more accurate communication with consumer over food condition	Portion controlled packaging – only use/cook what is needed
	Opened/part used (37%)				
Prepared, served or cooked too much (1.6 Mt)	Not served (10%)	Resealable packaging – only use/ cook what is needed			
	Left on plate (29%)				

2.3.1.5 Material

Marsh (2007) said that selection of packaging materials and technologies is crucial in maintaining quality and freshness of food products during transportation and storage. He listed out properties, environmental issues and cost for several packaging materials that are popular in food industry. The listing is presented in Table 2.2 below: