PHYSIOGNOMIC TYPE PREFERENCE TOWARDS THE AESTHETIC OF PRODUCT DESIGN (SHAMPOO BOTTLE)

MUHAMMAD AZMI BIN HABEEB MOHAMED

This report submitted in partial fulfillment of the requirements for the award of

Bachelor Degree of Technology Management (Technology Innovation) with Honours

Faculty of Technology Management and Technopreneurship

Universiti Teknikal Malaysia Melaka (UTeM)

28TH JUNE 2019

SUPERVISOR'S APPROVAL

I hereby declared that I have read this thesis and this research is sufficient in term of scope and quality. This project is submitted to Universiti Teknikal Malaysia Melaka (UTeM) as a requirement for completion and fulfillment of Bachelor Degree of Technology Management (Technology Innovation) with Honours (BTMI)

HASOLOAN HAERY I.P
PENSYARAH KANAN
FAKULTI PENGURUSAN TEKNOLOGI
DAN TEKNOUSAHAWANAN
UNIVERSITI TEKNIKAL MALAYSIA
MELAKA

Signature : .....

Name of Supervisor : Mr. Hasoloan Haery Ian Pieter

Date : 28th June 2019

Signature : .....

Name of Panel : Prof. Madya. Datin. Dr Norizah Mohamad

Date : 28th June 2019

DECLARATION

I hereby, declared this report entitled "Physiognomic type preference towards the aesthetic of product design (Shampoo Bottle)" is the results of my own research except as cited in references.

Signature : 

Name : MUHAMMAD AZMI BIN HABEEB MOHAMED

Date : 28th June 2019

DEDICATION

For my beloved parents who were always supported me,

Habeeb Mohamed bin Shaik Mohamed

Siti Faijah binti Mohamed Audham

For my supporting supervisor,

Mr. Hasoloan Haery Ian Peter

For my special partner, families and friends, thank you for your love and care.

ACKNOWLEDGEMENT

First of all, I would like to thank the Faculty of Technology Management and Technopreneurship (FPTT) UTeM for providing this subject. This project has given me the opportunity to gain deeper knowledge about the topics that I chose. Without this subject, I would not know if I will be to complete this project as an undergraduate.

Next, I would like to take this opportunity to express my gratitude to my supervisor Encik Hasoloan Haery Ian Peter who has been giving me guidance patiently to make sure that I am at the right path. Without his help, this project would not be completed successfully. I also would like to thank my panel, PM Datin Dr Norizah for giving me guidance to improve my study on the topic that I chose. Apart from that, I would like to take this opportunity to convey my gratitude to other lecturers and course mates who always there to help me whenever I faced difficulties in completing the final year project and willing to share the information to me.

Last but not least, I would also like to express my appreciation to my family and friends who have given their hand along the way. Their loves spiritual supports have always given me the strength to finish this final year project. Once again, thousand word could not fully express my gratitude to them, but their kindness will be graved in my heart forever.

ABSTRACT

Today, as the demand for shampoo bottle that can fulfil the customer demand based on their preference are increasing, a solution for this problem are highly required in order to provide the best product to the customer that suit their taste. Based on that reason, a study has been carried out to find out the Physiognomic type preference towards the aesthetics of product design of shampoo bottle. The objective of this study is to investigate the preference towards the aesthetic of product design of Shampoo bottle based on Kansei Engineering, Physiognomic and PhiMatrix, and Analytical Hierarchy Process (AHP) features. Kansei Engineering will be the tool to translate human feelings towards the product, Physiognomic and PhiMatrix will be used to identify the respondent character and personality from their face structure while AHP will be used for the complex decision making process to make the best decision during the data analysis stage. First, the data and information of the customer preference and kansei words that represent their feeling towards the Shampoo bottle design were collected through 300 surveys. Next, the respondent face are captured and measured by using PhiMatrix to relate with their preference on the Shampoo bottle design. From the data collected, a correlation is made by using SPSS to know the customer preference based on their face structure. Then, Analytical Hierarchy Process(AHP) software are used to find which kansei word are mostly chosen by the respondent and what are the design that are mostly preferred by the respondent. From the findings, it is found that most of the respondents prefer Product 1 due to the Beauty of the product. Looking ahead, it is expected that this research will be important to understand customer demand preference and it will be useful to improve customer satisfaction towards the product

Keyword: Kansei, Physiognomic, Analytical Hierarchy Process

ABSTRAK

Kini, permintaan botol syampu yang dapat memenuhi citarasa pengguna semakin meningkat, sebuah penyelesaian yang dapat mengatasi masalah ini amatlah diperlukan untuk memberikan produk yang terbaik kepada pengguna yang dapat memenuhi permintaan mereka. Atas sebab ini, sebuah kajian telah dijalankan untuk mengetahui apakah Keutamaan seseorang terhadap reka bentuk estetik botol syampu mengikut ukuran Physiognomic (ukuran muka). Objektif projek ini adalah untuk mengkaji keutamaan terhadap reka bentuk estetik berdasarkan Kansei Engineering, Physiognomic dan PhiMatrix, dan juga Analytical Hierarchy Process (AHP). Kansei Engineering akan digunakan sebagai alat untuk menterjemah perasaan manusia terhadap sesuatu produk, Physiognomic dan PhiMatrix akan digunakan untuk mengenalpasti karakter dan personaliti responden berdasarkan ukuran muka mereka manakala AHP akan digunakan dalam proses membuat keputusan yang rumit untuk mendapatkan pilihan yang terbaik semasa menganalisis data. Sebagai permulaan, data dan maklumat keutamaan pengguna dan perkataan kansei yang mewakili perasaan mereka terhadap reka bentuk botol syampu telah dikumpulkan melalui 300 soalan kaji selidik. Seterusnya, mengambil gambar muka responden dan diukur mengunakan peranti PhiMatrix untuk menghubungkaitkan preferens mereka terhadap reka bentuk botol syampu. Daripada data yang telah dikumpulkan, sebuah korelasi telah dilakukan mengunakan SPSS untuk mengetahui preferens pengguna berdasarkan struktur muka responden. Justeru, perisian Analytical Hierarchy Process (AHP) digunakan untuk mengetahui perkataan kansei yang paling banyak dipilih oleh responden dan rekabentuk yang paling digemari pengguna. Penemuan ini menunjukkan yang kebanyakkan pengguna cenderung untuk memilih Produk 1 atas factor Kecantikan produk itu. Di masa akan datang, kajian ini dilihat sebagai penemuan yang sangat penting bagi menaiktaraf kepuasan pengguna terhadap produk dan memahami preferens permintaan pengguna.

Keyword: Kansei, Physiognomic, Analytical Hierarchy Process

TABLE OF CONTENT

LIST OF FIGURE

LIST OF TABLE

LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE

AHP	-	Analytical Hierarchy Process
ANOVA	-	Analysis of Variance
BE	-	Beautiful
CA	-	Casual
CO	-	Comfortable
DU	-	Durable
en	-	Endocanthion
ex	-	Exocanthion
Gl	-	Glabella
KE	-	Kansei Engineering
LC	-	Lateral canthus
lchk	-	Lateral cheek
LO	-	Lovely
Me	-	Menton
MP	-	Managing Partner
SPSS	-	Statistical Package for Social Science
pa	-	Postaurale
PSM 1	-	Projek Sarjana Muda 1

PSM 2	-	Projek Sarjana Muda 2
subN	-	Subnasale
Tr	-	Trichion

CHAPTER 1

INTRODUCTION

1.1 Background of Study

According to Takeuchi and Quelch (1983), companies that try to define their customers' attitudes on product and service quality were often focusing too narrowly on the meaning of quality for their products and services. Also, according to Bordegoni (2017), the companies that develop their products with the aim of properly responding to customers' needs to improve their probability of success on the market, at the present time this is not enough. Nowadays, according to Shill *et al.*, (2010), there are highly demanding of customers to the advent of new technologies and methods. Borgianni (2011) pointed out that for anticipating the outcomes of a business activity, the predictive metrics between process performance and expected customer appreciation of products should relevant to the market. Based on this reason, Ko (2010) stated that the companies need to be more focusing on the combination and adaption of new technologies to create new experiences and value for customers. In addition, through systems or products, according to Chen and Chang (2006), there were communication about the design of products between users or among designers required. Specifically, they emphasized about the consumers' tastes against product's form in which involved the cognition and positioning of the formal styles good design.

First, this is due to increasingly concerned of customers to affective aspects, such as texture, outlook, colour, forms and images of new products (Chan *et al.*, 2018). Here, since product technologies turn to be mature and/or competitors can quickly catch up what the competitors do. According to Khalid and Helander (2004),

the design for performance (e.g. functional design) and design for usability (e.g. ergonomic design) no longer empower a competitive edge. Previously, Martin (1998) in this perspectives said that the product that has aesthetic qualities will become precious and will be kept longer even after the product become useless compared to product that is purchased only for its functionalities.

Second, aesthetics and design are the biggest distinguishing elements when comes to preference of a customer on a product (Zolli, 2004). Norman (2004) said that the tendency towards aesthetic in product differentiation might be based on aesthetic designs that creates a good feedback to customer to quickly purchase the product despite of the consumption domain. Previously, Bloch (2003) in their study stated that the customer will be willing to pay higher and the customer towards the product will increase when it comes to aesthetic design. The facts, customers are more demanding to their satisfaction (Huynh *et al*, 2010). They are not only enough to quality of products, but to psychological feelings fulfilled from the products and services to be purchased. In this sense, when they choose a product, Eriksson (2018) stated that consumer decisions comprise of a complexity aspects related to experience based on senses and functional requirements of the product properties. This is a reason why on how consumers differentiate one particular product form style from the others is still vaguely understood (Chen *et al*., 2006).

Third, since emotions are closely related to human psychology, by understanding of user emotions, according to Desmet and Hekkert (2009), the designers will be able to anticipate the emotional effects to the products. In this sense, since the emotion becomes more important with the emergence principle of the consumer pleasure (Khuong & Tram, 2015), to design the attractive products therefore requires knowledge about the feelings and impressions of the customer (Schütte, 2005). Based on this reason, he argued that this is why today's development product probably goes towards integration of emotional values in products. In this sense, Demirbilek and Sener (2003) stated that a product tells us something about itself and in certain cases also about the human being who owns it.

Fourth, since the aesthetic and pleasing property of products is one of the major design dimensions in order to create a meaning and relevance of a product (Eriksson *et al*., 2018), there were consumers' constructions to the meaning of

product used that rely on the capacity for symbolic thought and coding determined by the individual's cultural capital, Kälviäinen (2002). According to this belief, Desmet and Paul Hekkert (2009) discussed about the consequences of designs the products that give an illusion to choice and encourage passivity. In this perspectives, the differences in semantics and terminology to the coherence of transferring affective needs effectively from customers to designers (Jiao *et al.*, 2006). While, Schütte (2002) stated about the composition of the different product properties that impact on the user. To answer product development for affective needs, Nagamaichi *et al.,* (2005) proposed the Engineering (KE) that emphasizes on the understanding of the whole product experience from ergonomic and emotional perspectives, and synthesizes the two perspectives to get the whole picture of the total product experience. Specifically, he underlined with the philosophy "product-out" and "market-in" (Nagamachi, 2008). *Kansei* is a Japanese term reflecting a multifaceted expression that is closely connected to Japanese culture (Huynh *et al.,* 2010). According to Oztekin *et al.*, (2011), Kansei engineering tries to produce a new product based on the consumer's feeling and demand.

In conclusion, there were personality types behaviour can be employed to evaluate the characters uniqueness (Diaz & Guerrero, 1997). As mentioned by Carpenter and Graham (1971), when the mechanism are arranged in an expressive and instinctive structure, the aesthetically attractive composition (where the artist has found the correct or "visually right") will become representational and symbolic balance between components of product and designs. Here, to determine the combination of product properties, according to Oztekin et al., (2011), will result in the designs which take customer emotions into account. Even though consumers cannot always articulate their quality requirements (Takeuchi & Quelch, 1983), there were designers can influence the emotions elicited by their designs because these emotions are not as intangible as they seem (Desmet, 2003). Based on theories of emotion, the conditions that underlie and elicit to emotion are universal. Achar *et al.*, (2016) stated that emotions are multidimensional feelings associated with a profile of cognitive evaluations that reflect information about consumers' relationship to their social and physical surroundings as well as their interpretations to the relationships. In terms of customer satisfaction, this is as what previously defined by Krafft (1999)

that was influenced by a positive emotional reaction on a cognitive standard cycle between the expectations of the customer and the perceived quality level of goods.

1.2 Problem Statement

The problem that this research is trying to solve is to identify if the aesthetic of the product design has any effect to the customer preference on the product. Zolli (2004) mentioned that aesthetics and design are the biggest distinguishing elements when comes to preference of a customer on a product. Since aesthetic perception and judgement are not merely cognitive processes, Schindler *et al* (2017) stated that the empirical study to the feelings involved experiences therefore requires conceptualization and measurement of aesthetic emotions. This shows that somehow the aesthetic design of a product plays an important role when come to the customer preference towards the product.

Next, this research also want to identify whether if the physiognomic (face) structure of the person has any relation towards the customer preference on the product. According to Teng *et al* (2008), the preference of cognition behavior, thinking and memory would influence an individual's behavior and activities directly or indirectly. This is supported by Liang et al., (2010: 147), he mentioned that humans perceive external information stimulated by the product form with sensory organs, and generate activities of cognitive evaluation of thoughts and emotion internally. By conducting this research, we could also identify if the face structure of a person also could influence the individual behavior towards the product.

Last but not least, this research wants to utilize Kansei engineering approach to see whether it could determine the customer preference on the aesthetic of product by articulating kansei words that are generated in the survey question distributed to the respondents. Zhai *et al* (2011) mentioned that the key issues in affective design is the acquisition of Kansei knowledge to map between product design elements and human affections. The statistical analysis will be conducted by using software such SPSS v.15 will be utilised to find the correlation between the customer physiognomic

(face) and their preference on the product design by using Kansei Engineering approach.

1.3 Objective

1. To investigate and identify the customer preference related to individual physiognomic based on Kansei Engineering (KE)
2. To analyse the product design preferences correlated to physiognomic characteristics by using AHP approach
3. To validate the customer product design preferences towards physiognomic characteristics by conducting post-survey
4. To recommend the improvement recommended for future study

1.4 Scope of Project

The project is focused on the physiognomic (face) type preference towards the aesthetic of product design by selecting shampoo as product in this project. The design of shampoo bottle will be the key factor in order to identify the customer preference based on their face type. The method use to collect the data will be by using survey. The survey will be conducted in Melaka Tengah, Malaysia.

1.5 Report Outline

Chapter 1: Introducing the background, problem statement, objectives and scope of project in the physiognomic type preference towards the aesthetics of product design.

Chapter 2: Describe and discuss the literature review on the concept and theories of personality style and aesthetics.

Chapter 3: Describe and discuss the methodology of this project. Gantt chart and flow chart is used to describe the process and progress of the project.

Chapter 4: Developing the questionnaires and data collection by using survey, observation and questionnaires as the method. Discussing the result of analysis and verifying the preference of aesthetic product towards the face type

Chapter 5: Conclude the conclusion for the final report and recommend suggestions for further study.

1.6 Summary

This chapter introduced the introduction, background, problem statements, objectives and scope of the project. The background of this project is related to aesthetic of product design, which is shampoo bottle. The objectives of this project were to investigate the preference towards the aesthetic of product design based on Physiognomic (face) type. The scope of this project focused on the Physiognomic type preference towards the aesthetic of product design by selecting shampoo as the product.

CHAPTER 2

LITERATURE REVIEW

The literature review explores the dominant themes includes studies, and research of published materials such as case studies, journal and thesis. The aim of review is to analyse the important segment in a published body of knowledge through summary, classification and comparison of past research studies and theoretical articles. The basic knowledge of personality type preference will be reviewed. Besides, this chapter will describe the topics related to personality type and aesthetic design such as Physiognomic, Analytic Hierarchy Process (AHP) and Kansei Engineering.

2.1 Physiognomic

Physiognomic is the art of determining character or personal characteristics from the form or features of the body, especially the face. Martindale (1977) stated that because of the physiognomic aspects is the main thinking process, creative people need better access to show more of these phenomena than non-creative people. Werner (1948) proposed the term physiognomic perception which affect and enthusiasm are perceived in non-living and static stimuli. Warner also held that the physiognomic perception is a combination between emotional and perceptual system, for example the sun maybe viewed as friendly and playful but at the same time it can also be deem as evil.

Table 2.1: Measurement of the soft tissue point to obtain linear distance

TABLE 1: Soft tissue points.

Point	Clarification
Trichion (Tr)	The beginning of the forehead when one lifts the eyebrow
Glabella (Gl)	The most prominent point of the forehead at the superior aspect of the eyebrows
Subnasale (subN)	Point in the midsagittal plane where the nasal septum merges into the upper lip
Menton (Me)	The most inferior point on the soft tissue chin
Stomion (sto)	Midpoint of the intralabial fissure
Postaurale (pa)	The most posterior point on the helix (outer rim of the ear)
Exocanthion (ex)	Most lateral point of the palpebral fissure at the outer canthus of the eye
Endocanthion (en)	Most medial point of the palpebral fissure at the inner canthus of the eye
Cheilion (ch)	Corner of the mouth
Lateral canthus (LC)	Lateral canthus of the eye
Lateral nose (Ln)	Lateral side of the nose
Lateral cheek (lchk)	Lateral border of the cheeks

Figure 2.1: Lengths of The Face and Set of Ideal Proportions

The parameters of the following is measured in the photographs:

(1) Length of face

i. (Tr-Me): face height,

ii. (lchk r-lchk l): face width,

iii. (Me-sto): lowest point on the chin and point where upper and lower lip merge,

iv. (sto-LC): point where upper and lower lip merge and eyes corner,

v. (Me-Ln): lowest point on the chin and nostril outer edge,

vi. (Ln-Tr): outer edge of nostril and highest point of forehead;

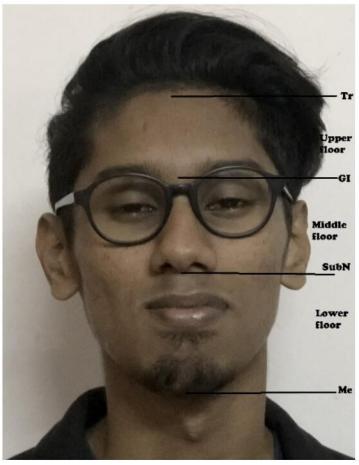

Figure 2.2: Division of the face into horizontal thirds

(2) Division of face

(a) Horizontal thirds of face (Figure 2):

i. Upper third: Tr-Gl,
ii. Middle third: Gl-subN,
iii. Lower third: subN-Me;

(b) Vertical fifths of face (Figure 3)

i. pa r-ex r,
ii. ex r-en r,
iii. en r-en l,
iv. en l-ex l,
v. ex l-pa l

(3) Ideal proportions: marking and connecting points are required to obtain suitable lengths, and the measured parameters will be compared with the ideal set of proportions (1 : 1.618):

i. The ratio lchk r-lchk l : Tr-Me expected to be 1 : 1.618
ii. The ratio sto-Me : sto-LC expected to be 1 : 1.618
iii. The ratio Me-Ln : Ln-Tr expected to be 1 : 1.618
iv. The ratio subN-sto : subN-Me expected to be 1 : 3 , lower facial third index, can also be shown in percentage (30 : 70%)