

AESTHETIC PREFERENCES BASED ON CUSTOMER PERSONALITY AND
CHARACTERISTIC (WATER DRINKING BOTTLE)

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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

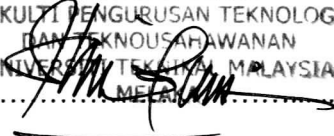
Universiti Teknikal Malaysia Melaka (UTeM)

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)

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DEDICATION

For my beloved parents who were always supported me,

Mohd Gzali Bin Jamhari

Siti Khalijah Binti Daud

For my supporting supervisor,

Mr. Hasoloan Haery Ian Peter

For my partner (Amin Hanzalah), families and friends, thank you for your
love and care.

ACKNOWLEDGEMENT

Alhamdulillah and Thanks to Allah with all gracious and merciful for giving me strength and ability to accomplish this project research successfully. I would like to express my gratitude to all those who gave me the possibility to complete this thesis especially En. Mohd Gzali and Puan Siti Khalijah. I am deeply indebted to my supervisor Mr. Hasoloan Haery Ian Peter whose help, stimulating suggestions, encouragement and guidance helped me in all the time of research for and writing these thesis. Furthermore, I would like to thank to my aunties, Puan Zaleha Daud, Puan Noraini Daud and Puan Norizah Daud for all encouragement.

Finally, I would like to thanks to all my friends and my team members. I want to thank them for all their help, support, interest and valuable hints in completing this report. Especially, I would like to give my special thanks to Maryam Jamillah, Muhammad Umar Al-Fateeh and my partner, Amin Hanzalah who always cherish and wait for me to complete this work.

ABSTRACT

The purpose of this study is to identify aesthetic priorities based on personality and customer characteristics through Kansei Technique (KE) and the nature of cognitive style (CSI and Big-5 Inventory). In this study, the researchers have set objectives: (1) to analyze the aesthetic priorities of personality-related products (Big Five) and Cognitive Style Index (CSI) and (2) to confirm customer's aesthetic preferences towards the index of personality and cognitive style post investigation. At the beginning of the study, it is necessary to conduct a survey, which is related to developing a questionnaire. Respondents were from the Technical University of Malacca (UTeM) and the Ayer Keroh area and 350 samples were taken. Prior to developing a major survey, researchers conducted preliminary tests using 60 sample and expert opinion (7 lecturers) to compile questions for the main survey. The questionnaire developed contains customer preferences, 5 words that represent emotional meanings based on Kansei Words, 2 categories of cognitive style (CSI and Big-5), and 8 designs of drinking water. As a result of this study, researchers have found that most respondents chose Design-1 based on 'Safety' and 'Convenient'. Later, the researchers reaffirmed the product priority again using 60 respondents and using the Preferred Expert software, the result shows that Design-1 is the most preferred that satisfies customer satisfaction standards and is associated with Kansei Words. For Big-5 Inventory, analysis shows that most of the 'Active Style Extraversions' are also related to the majority of respondents' age and occupation. Meanwhile, for CSI, analysis shows that most are from the 'Adaptation Styles' that are also related to how the elements of the product's priorities when buying a product.

Keyword: *Aesthetic Preference, Big-5, Cognitive Style Index (CSI), Product Attribute, Kansei*

ABSTRAK

Tujuan kajian ini adalah mengenalpasti keutamaan estetik berdasarkan ciri keperibadian dan pelanggan melalui Kansei Technique (KE) dan gaya kognitif (CSI dan Inventori Big-5). Dalam kajian ini, para penyelidik telah menetapkan objektif: (1) untuk menganalisis keutamaan estetika produk berkaitan personaliti (Lima Besar) dan Indeks Gaya Kognitif (CSI) dan (2) untuk mengesahkan keinginan estetik pelanggan terhadap indeks keperibadian dan kognitif gaya penyiasatan pos. Pada permulaan kajian, adalah perlu untuk menjalankan tinjauan, yang berkaitan dengan membangunkan soal selidik. Responden adalah dari Universiti Teknikal Melaka (UTeM) dan kawasan Ayer Keroh dan 350 sampel telah diambil. Sebelum membangunkan kaji selidik utama, para penyelidik menjalankan ujian perintis dengan menggunakan 60 sampel dan pendapat ahli (7 orang pensyarah) untuk mengkompilkan soalan untuk tinjauan utama. Soal selidik yang dibangunkan mengandungi pilihan pelanggan, 5 perkataan yang mewakili makna emosi berdasarkan Kansei Words, 2 kategori gaya kognitif (CSI dan Big-5), dan 8 rekaan air minuman. Sebagai hasil kajian ini, penyelidik mendapati bahawa kebanyakan responden memilih Design-1 berdasarkan 'Keselamatan' dan 'Mudah'. Kemudian, para penyelidik mengesahkan keutamaan produk sekali lagi menggunakan 60 responden dan menggunakan perisian Pakar Pilihan, hasilnya menunjukkan bahawa Design-1 adalah yang paling disukai yang memenuhi piawaian kepuasan pelanggan dan dikaitkan dengan Kansei Words. Untuk Inventori Big-5, analisis menunjukkan bahawa kebanyakan 'Pelanjutan Gaya Aktif' juga berkaitan dengan majoriti umur dan pekerjaan responden. Sementara itu, untuk CSI, analisis menunjukkan bahawa kebanyakannya adalah dari 'Gaya Adaptasi' yang juga berkaitan dengan bagaimana unsur-unsur keutamaan produk ketika membeli produk.

Kata Kunci: Keutamaan Estetik, Big-5, Indeks Gaya Kognitif (CSI), Atribut Produk, Kansei

TABLE OF CONTENT

CHAPTER	CONTENT	PAGE
	SUPERVISOR'S APPROVAL	II
	DECLARATION	IV
	DEDICATION	V
	ACKNOWLEDGEMENT	VI
	ABSTRACT	VII
CHAPTER 1	INTRODUCTION	
1.1	Project Background	1
1.2	Problem Statement	5
1.3	Objective of Project	8
1.4	Scope of Project	8
1.5	Framework of Objective	10
1.6	Summary	10
CHAPTER 2	LITERATURE REVIEW	
2.1	Introduction	12
2.2	Customer Satisfaction	12
	2.2.1 Customer Satisfaction Model	13
	2.2.2 Importance of Customer Satisfaction	17
2.3	Kansei Engineering	18
	2.3.1 Process of Kansei Engineering	19
	2.3.2 Kansei and Product development	21
	2.3.3 Types of Kansei Engineering	21
	2.3.4 Kansei Engineering Model	23
	2.3.5 Application of Kansei Engineering	25
2.4	Semantic Differential Approach	26
2.5	The Big-Five Method	27
	2.5.1 The Five Factors in the Big Five Approach	27
2.6	Customer Satisfaction Index (CSI)	29

	2.6.1 Definition of CSI	29
	2.6.2 Concept of CSI	30
	2.6.3 CSI Scoring	30
	Summary of Literature Review	32
CHAPTER 3	METHODOLOGY	
3.1	Introduction	47
3.2	Methodology of the Project	48
3.3	Literature Study	48
3.4	Data Collection Phase	51
3.5	Questionnaire	51
3.6	Framework of Water Drinking Bottle Design	52
3.7	Data Collection Phase	52
3.8	Analysis Phase	53
	3.8.1 The Manipulating phase	53
	3.8.2 The Synthesis Phase	54
3.9	Evaluation and Validity Phase	54
3.10	Gantt Chart	54
3.11	Summary	58
CHAPTER 4	RESULT AND DISCUSSION	
4.1	Introduction	59
4.2	Preliminary Test	60
	4.2.1 Developing Questionnaire	60
	4.2.2 Result of Preliminary Test	60
	4.2.2.A) Correlation Result	61
	4.2.2 B) Kansei Engineering	63
	4.2.2 C) Design Preference	64
4.3	Evaluation Data from Respondents	65
	4.3.1 Sample Size of Respondent Involved	65
	4.3.1 A) Analysis of Respondent Background	66
	4.3.1 B) Analysis of Product Background	70
	4.4 Analysis of Product	75

	4.5 Kansei Engineering	77
	4.5.1 Analysis of Kansei Words to Water Drinking Bottle Design	77
	4.5.2 Conclusion of Kansei Engineering	84
	4.6 Correlation Analysis	85
	4.6.1 Correlation Analysis Between Product Priorities	85
	4.6.2 Correlation of Big-Five	86
	4.6.3 Correlation Analysis of Cognitive Style Index (CSI)	88
	4.7 Summary	90
CHAPTER 5	CONCLUSION AND RECOMMENDATION	
5.1	Introduction	91
5.2	Conclusion	91
5.3	Recommendation	93
	REFERENCES	94
	APPENDICES	106

LIST OF TABLES

Table 1	Current Types of Micro-Models for Satisfaction. (Erevelles and Leavitt, 1992)	15
Table 4.1	The Correlation Between Customer Preferences	61
Table 4.2	Range Scaling of Correlation Values	62
Table 4.3	The Meaning of Customer Preferences' Correlation	62
Table 4.3	The Highest 5 of Kansei Words Chosen	64
Table 4.5	The Highest 8 of Design Preference Chosen	65
Table 4.6	Statistic of Frequency of Gender of the Respondents	67
Table 4.7	Statistic of Frequency of Age of the Respondents	67
Table 4.8	Statistic of Frequency of Occupation of the Respondents	68
Table 4.9	Statistic of Frequency of Races of the Respondents	69
Table 4.10	Statistic of Frequency of Material of Water Drinking Bottle	70
Table 4.11	Statistic of Frequency of Capacity of Water Drinking Bottle	71
Table 4.12	Statistic of Frequency of Current Water Drinking Bottle Owned	72
Table 4.13	Statistic of Frequency of Price Preferences	72
Table 4.14	Statistic of Frequency of Preferences of Water Drinking Bottle Design	73
Table 4.15	Statistic of Frequency of Cap of Water Drinking Bottle Design	75
Table 4.16	Statistic of the Priorities Background When Respondent Purchased the Product	76
Table 4.17	Statistic of the Condition or Situation That Make Respondent Purchased the Water Drinking Bottle	76
Table 4.18	Correlation Between Product Priorities	86
Table 4.19	Correlation Between Big-Five and Demography	86

Table 4.20	Data Analysis of Demography	87
Table 4.21	Correlation Between Big-Five and Product Background	87
Table 4.22	Correlation Between Big-Five and Product Priorities	88
Table 4.23	Correlation Between Big-Five and Product Priorities	89
Table 4.24	Correlation Between CSI and Product Priorities	89
Table 4.24	CSI Style Sorting Data	89
(a)		
Table 4.24	Product Priorities	89
(b)		
Table 4.25	Correlation Between CSI and Product Preferences	89

LIST OF FIGURES

Figure 1.1	Type of Water Drinking Bottle (<i>i.e.</i> , Eliaaware)	9
Figure 1.2	Framework of Objective	11
Figure 2.1	Traditional Macro-Model of Customer Satisfaction. (Woodruff and Gardial, 1996)	14
Figure 2.2	Model of Two Levels of Satisfaction and Perceived Service Quality. (Based on a study by Bitner and Hubbert, 1994)	15
Figure 2.3	The Process of Kansei (Lokman and Nagamchi, 2009)	19
Figure 2.4	Kansei Gateways (Lokman & Nagamachi, 2009).	21
Figure 2.5	Visualisation for four stages Nested Model (Munzner et al., 2009)	23
Figure 2.6	The Big Five Personality Traits	28
Figure 3.1	Methodology of Project	49
Figure 3.3	Framework Customer Profiling vs Product Aesthetic Preference	55
Figure 3.4	Gantt Chart PSM 1	56
(a)		
Figure 3.4	Gantt Chart PSM 2	57
(b)		
Figure 4.1	Kansei Words Chosen	63
Figure 4.2	The Results of Water Bottle	64
Figure 4.3	Sample Size on Sample Size Calculator	66
Figure 4.4	Percentage of Gender of the Respondents	67
Figure 4.5	Percentage of Age of the Respondents	68
Figure 4.6	Percentage of Occupation of the Respondents	69
Figure 4.7	Percentage of Races of the Respondents	69
Figure 4.8	Percentage of the Material of Water Drinking Bottle	70
Figure 4.9	Percentage of Capacity of Water Drinking Bottle	71

Figure 4.10	Percentage of Current Water Drinking Bottle Owned	72
Figure 4.11	Percentage of Price Preferences	73
Figure 4.12	Percentage of Preferences of Water Drinking Bottle Design	74
Figure 4.13	Percentage of Cap of Water Drinking Bottle Design	74
Figure 4.14	Percentage of the Priorities Background When Respondent Purchased the Product	75
Figure 4.15	Percentage of the Condition or Situation That Make Respondent Purchased the Water Drinking Bottle	77
Figure 4.16	Graph of Design Product-1	78
Figure 4.17	Summary Analysis of Design Product-1	78
Figure 4.18	Graph of Design Product-2	78
Figure 4.19	Summary Analysis of Design Product-2	79
Figure 4.20	Graph of Design Product-3	79
Figure 4.21	Summary Analysis of Design Product-3	80
Figure 4.22	Graph of Design Product-4	80
Figure 4.23	Summary Analysis of Design Product-4	80
Figure 4.24	Graph of Design Product-5	81
Figure 4.25	Summary Analysis of Design Product-5	81
Figure 4.26	Graph of Design Product-6	82
Figure 4.27	Summary Analysis of Design Product-6	82
Figure 4.28	Graph of Design Product-7	82
Figure 4.29	Summary Analysis of Design Product-7	83
Figure 4.3	Graph of Design Product-8	83
Figure 4.31	Summary Analysis of Design Product-8	84
Figure 4.32	Graph of Design Product Preference	84
Figure 4.33	Summary Analysis of Design Product Preference	85

LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE

AHP	-	Analytical Hierarchy Process
BE	-	Beautiful
BR	-	Brand
C/E	-	Cheap/Expensive
CA-	-	Casual
CO	-	Comfortable
CO	-	Colour
CSI	-	Cognitive Style Index
DE	-	Design
DI	-	Dimension
DS	-	Discount/Sale
EM	-	Easy to Move
EU	-	Easy to Use
FC	-	Favourite Colour
HIE	-	Hypoxic Ischemic Encephalopathy
KE	-	Kansei Engineering
LS	-	Limited Stock
M	-	Material
MMFs	-	Multi-Dimensional Modelling Features
PR	-	Price

PRE	-	Preference
PSM 1	-	Projek Sarjana Muda 1
PSM 2	-	Projek Sarjana Muda 2
QFD	-	Quality Function Deployment
RD	-	Row Design
RE	-	Recyclability
SA	-	Safety
SD	-	Semantic Differential
SI	-	Size
SP	-	Shape of Product
TR	-	Trendy

CHAPTER 1

INTRODUCTION

1.1 Project Background

In recent years, the research toward consumers' psychological factors were as an important issue in industrial design. Specifically, towards the product image and the consumers' perception (Chuang *et al.*, 2001). In this context, Kotler (2000) argued that the importance of customer satisfaction towards their expectation is as a person's feelings of pleasure or disappointment resulted from comparing a product's perceived performance (or outcome). Bowen and Chen (2001) emphasized that customer satisfaction must lead to customer loyalty. They said that to satisfy customers is, therefore, not enough. There has to be extremely satisfied customers. Oliver (1997) interpreted a loyalty as a deeply commitment to re-buy or re-patronize a preferred product or service consistently in the future. To make in such level as for an increasing recognition, Sivadas and Baker-Prewitt (2000) previously stated that customer loyalty should be measured refers to the ultimate objective of customer satisfaction.

However, Singh (2006:3) underlined that the satisfaction has no direct impact on loyalty. He said that customer loyalty is the result of an organization in creating a benefit for a customer. He gave an example related to the case of a departmental store as well as on the repurchase influences. Whiles, Li (2013:41) defined customer loyalty into two aspects, such as the behavior of customers (which is demonstrated by repetitive purchases of the same brand, a preference of a brand

and the recommendation of the brand to others) and the attitude of customers (which is the internal affect and perception components of customer loyalty). In this reason, since the challenge for business today is to move from product orientation to customer focus, Cook (2002:7) said customers want to be treated as individual. Also, they want greater choice and not be 'sold to' or manipulated. This is why current customers becoming more difficult because they are increasingly sophisticated, educated and well informed.

In addition, although the development of customer's satisfaction is very important for every business organization's to success by putting the satisfaction of the customers always come "first" to increase the number of the customers (Kadka & Maharjan, 2017:1), there were the risk existed if a business exclusively focuses on customer satisfaction with an undifferentiated brand (Clarke, 2001). Here, Fornell (1992:7) previously argued that the impact of customer satisfaction for repeat business and customer loyalty is not the same for all industries. He agreed that satisfied customers tend to be loyal customers, but loyal customers are not necessarily satisfied customers because there are other means of customer retention. Bansal and Gupta (2001) stated that customer loyalty is the way of building of sustainable competitive advantage, not a choice. Therefore, to ensure the attention of the customers at the competing market, Kadka and Maharjan (2017:1) stated that is through providing the best and the most favourable products as the important aspects in company's eyes. Specifically, according to McGuire (1999), towards the level of satisfaction or dissatisfaction is as the reflection of customers' perceptions and attitudes from previous service experiences that may also influence repurchase intentions. Brunel and Kumar (2007:238) in this case underlined about the product personality perceptions towards five product personality dimensions. Whiles Eckman and Wagner (1994) discussed about the process of information based on the consumer decision-making models that may be affected by personal characteristics.

Moreover, Shieh *et al.*, (2011) pointed out the process in product design related the communication between designer and users. This is as one method on how to capture what the customers' expectation towards the products where the designer need to correct interpret customer feelings' expression. According to Chen *et al.*, (2009), this is due to the way of designers look at product elements or

characteristics is sometime different to consumers' view of product image and vice versa. Also, the language used. To be able to communicate efficiently, Dumitrescu (2013:304) said that the design team should speak the same common language free of professional jargon terms. Here, the articulation refers to the number of discrete categories the individual perceives on a dimension (Wallendorff *et al.*, 1981).

Based on this reason, Pourtalebi and Pouralvar (2012) said that products have a symbolic meaning to their utilitarian benefits. The meaning that is determined by various experiences of people in their daily life (Ortony *et al.*, 1988). The meaning is also the result of a consciously or unconsciously evoked psychic attitude during the perception of object or called as the mind 'place of itself' (Ossowski, 1966). According to Pourtalebi and Pouralvar (2012), the meaning that refers to physical product and is described with human personality characteristics is called "product personality". This is parallel to Eckman and Wagner (1994) in their study that called aesthetics is as a branch of philosophy. First, since the meaning built into the form of product based on designers' objective is not always same with the meaning in the eyes' of customer (Krippendof, 1995), to have better experience of pleasure and satisfaction toward a certain product, Chew *et al.*, (2016:172) said that the recognition and identification of user aesthetics is ultimately required in industrial design. Hung and Chen (2012:81) defined three fundamental dimensions of product semantics, such as trendiness, complexity, and emotion

Second, Oliver (1997) emphasized the customer satisfaction is as customers' needs and goals based on a fulfilment of an emotional response. The satisfaction, according to Hoyer and MacInnis (2001), can be associated with feelings of acceptance, happiness, relief, excitement, and delight. Here, Myers (2004) discussed about the emotions as an external stimuli evaluation based on physical body responses, while Goldman (1995) towards the perceptions against the products. Based on product emotion, Desmet (2003) classified into such as instrumental emotions, surprise emotions, social emotions, interest emotions and aesthetic emotions. Therefore, by understanding the relationship between the appearance and the perception to compete in the competitive market and to achieve higher sales, Mata *et al.*, (2013:2) said that the products development requires an enhanced aesthetic appeal. Ulrich (2006) argued that a sense of quality to the product based on

attractive things (response of aesthetic) is rapid, involuntary, and do not occur at random, although they can be biased positively or negatively. In the context of design, Lawson (1983) previously stated that this is due to aesthetics of a product have the capacity to generate immediate response towards an object through sensory system. Based on a design product perspective, to meet consumers' need based on the physical elements of the product require consumers' perception (which is called Kansei), there was a certain type of aesthetic values alongside with others, such as sublimity or comicality (Ossowski, 1966:3). Also, the relationship between the individual's personality structure and aesthetic choices towards the aesthetic preference (McWhinnie, 1965:41). This meant that aesthetic values and make buying decisions based on their aesthetic preferences (Chew *et al.*, 2016:165).

Third, Bunel and Kumar (2007) listed the aesthetic factors based on features appearance of products include materials, colour, proportion, ornamentation, shape, size and reflectivity, while Heckert (2006) suggested about the combination to capture sensory system based on physical object. This is why Ossowski (1966) argued about the product based on aesthetic valuation and aesthetic experience. He noted that aesthetic experience towards the product is as an object in indispensable condition of consciousness, while aesthetic valuation is an evaluation that is simultaneously to the central object of aesthetic. However, since human taste (towards aesthetic preferences) is rather unstable at all stages of life, Pugach *et al.*, (2017:10) proposed “*aesthetic construction*” and the need of re-evaluation the existing frameworks and methodologies in empirical aesthetics by understanding of aesthetics in terms of core cognitive systems.

The last, based on aesthetics appearance, Bloch (1995) stated there were product design distinguishes from competitors based on consumers' perceptions towards market recognition. Thurgood *et al.*, (2014:396) noted the important of aesthetic evaluations towards product designs based on the relationships between typicality, novelty, and contextual influences. This is due to the aesthetic objects or products within a particular domain may differ from one another in several ways (Wallendorf *et al.*, 1981). Whiles Carbon (2011) focused on the cognitive mechanisms that trigger and enable corresponding changes of aesthetic appreciation. This is a reason why a new way of understanding the aesthetics in terms of core

cognitive systems is important, especially cognitive control (*i.e.*, the ability to adapt cognition to current situations) (Pugach *et al.*, 2017:2 & 10) and the situation in which the activity of observing a product itself produces aesthetic emotions (Haug, 2016:819). An instance, Openness/Intellect is as the personality domain of the aesthetically sensitive (Fayn *et al.*, 2015:2). While positive aesthetic attitudes have strongly related to openness the experience and somewhat less to extraversion, but lower scores on agreeableness and conscientiousness (McManus & Furnham, 2006:555).

1.2 Problem Statement

In today's highly competitive markets, many products are, now, saturated due to similar functionalities. By offering the consumer added value, according to Mata *et al.*, (2013:528), is the only way to stand out from competitors, especially aesthetic appeal or emotional attachment. Aesthetics is one of the most significant features that are enable to influence the success of product in the future market (Herr, 2000). However, the integration of aesthetic factors to design has been very slow (Pham, 1999). In addition, the decision to integrate other functions for companies to enable the creating of characteristic product and company images for a competitive advantage (Horvarth, 2001:6).

Based on this reason, Lim *et al.*, (2011:113) stated that a new way of concept that emphasizes the importance of articulating sophisticated qualities for promoting the design of aesthetic is required. This is due to aesthetics are vital of product design (Wu *et al.*, 2011:121). Since the appearance is among the most important factors contributing to the popularity and market shares (Promjun & Sahachaisaeree, 2011:520), by superiorly designed products may therefore be more valued by agreeable individuals. Here, Pourtalebi and Pouralvar (2012) explained about the appearance of a product is as a medium solutions for consumer-product interaction problems and "*Product Personality*". Since the quality and the reliability of the products increased and the choices of consumers tend to be more influenced by the aesthetic qualities (Schmitt & Simonson, 1997), with such aesthetic

characteristics that meet customer emotional feelings would make the products more pleasant in customer feelings (Myszkowski & Storme, 2012:647). Whiles to evaluate the affective quality of a product, Bongard-Blanchy and Bouchard (2014) stated that might therefore be useful to measure the core affect of the test person, and then the quality the person attributes to the product. This meant that the preferences for aesthetic objects involved a sequential string of individual components (must be predictable and have the element of surprise) (Wallendorf *et al.*, 1981). This is a parallel to what Dumitrescu (2013:304) discussed about the product that should exceed its competition in all or almost all aspects: functionality, aesthetics, ergonomics, manufacturability and price.

However, Pugach *et al.*, (2017:2) said that the human aesthetics depends on the ability to adapt cognitive processes to a given situation, and to maintain heuristics over long periods. Also, to determine whether a design will produce a certain degree of aesthetic affection for particular consumer groups is typically a complex matter (Haug, 2016:809). For instances, based on customers' background such as ages (correlated to different experiences that may affect their preferences for visual information), gender (males and females) to have different culturally-based experiences, and may judge visual information differently (Eckman and Wagner, 1994). Crilly *et al.*, (2004) underlined that the response to aesthetic design is not only influenced by specific design factors (such as form or surface attributes), but may also be modified by characteristics of the individual, such as age, personality, cultural background or gender.

In addition, since the aesthetic experience is a product of the dynamic ongoing interaction between these two components of the system, (Locher *et al.*, 2009) said there were customer's preferences based on the cognitive structure that contains several types of information. Here, Wu *et al.*, (2011:122) stated about consumer behavior related to purchasing behavior, media choice, innovation, segmentation, fear, social influence, product choice, opinion leadership, risk taking, and attitude change. By understanding the relationship between the appearance and the perception, according to Mata *et al.*, (2013:527) could lead to the development of products based on perceptions and aesthetic parameters and as the key to designing appealing products that people want to own. In addition, since to derive aesthetic

pleasure from seeing, hearing, touching, smelling/tasting, and thinking certain patterns that are beneficial to our primary sense's functioning (Hekket, 2006:159), there were varieties of aesthetic judgements and emotional responses are obtained not at random (Pham, 1999). This is due to aesthetic appreciation is not only the result of the cognitive processing of a stimulus, but it is also the result of affective processes, which implies that aesthetic appreciation might be influenced by dispositional variables, such as values or personality (Myszkowski & Storme, 2012:642).

Moreover, since the conception of aesthetic perception is compatible with contemporary evidence from neuroscience, experimental aesthetics, and interaction design (Xenakis & Arnellos, 2014:1), however the responses formed by the process of behavioural control over time (for a *short* period of time) is not by physical sensing at a particular moment (Lim et al, 2008). Here, the main difficulty is that aesthetic factors are subjective and efforts to date have been made in an ad hoc manner. To make any significant progress, a systematic approach is essential (Pham 1999). Specifically, since an aesthetic experience consists of bright, emotional, and sensually expressive perceptions accompanied by experiences and their expressions (Kurolenko, 2014:512). Here, the product personality can have consequences for the users' interaction with the product (Janlert & Stolterman, 1997). This is a reason on why the qualities of a product that are described with personality characteristics cannot be reduced to a single tangible attribute of that product (Govers, 2004:11).

Based on aforementioned, this study will investigate the customer characteristics based on personality profiles towards their aesthetic preferences to the products. By considering perception as an anticipatory and preparatory process of detection and evaluation of indications the aesthetic preferences, this study will carry out the survey using the questionnaire developed based on products in the market and the personality type test. The articulation of aesthetics towards the product, the Kansei Engineering method will be employed to investigate the emotional expression toward the product (product semantics can be regarded as predictor variables). Since cognitive processes linked to the external stimuli information with the brain, this study will also employ the cognitive style test towards the respondents.

1.3. Objective

This project deals with the study and analysis of aesthetic preferences based on the client's personality profiles and features using Kansei Engineering for a background of personality and cognitive style. In order to achieve product aesthetics, in order to achieve satisfaction levels, this meant that the product's aesthetics had to be integrated into designs that met the customer's requirements. In terms of customer satisfaction, their preferences are compared and correlated with each individual's personality and cognitive style as an illustration of their characteristics in decision-making related to the preferences of the design product.

The objectives of this project are as follow:

1. To investigate and identify the aesthetic preferences of customer based on Kansei Engineering.
2. To analyse the product aesthetic preferences correlated to personality (Big-Five) and Cognitive Style Index (CSI).
3. To validate the customer product aesthetic preferences towards personality and cognitive style index through post-survey.
4. To recommend the necessary improvement for future research.

1.4 Scope of Project

In this project, the approaches used to determine customer preference and satisfaction based on personality types towards drinking water bottle products. The type of bottle is limited to four (4) types shown in figure 1.1.

The survey conducted in this study is to looking for the individual characteristics towards their preferences on the products based on the design forms and attributes. The software for statistical analysis in this study is SPSS v.15 where analysis conducted is towards the correlation between the customers' preferences based on the product attributes and their personality characteristics. Whiles, to