A STUDY ON PROFILE DESIGN OF SCARVES THAT CAN INFLUENCE THE AESTHETIC VALUE AND PRODUCT EVALUATION USING KANO MODEL METHOD AND IPA

This report is submitted in accordance with requirement of the University Teknikal Malaysia Melaka (UTeM) for Bachelor Degree of Manufacturing Engineering (Engineering Designs) (Hons.)

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ABSTRAK

Pada masa kini, pereka fesyen mencipta reka bentuk selendang berdasarkan trend. Tidak ada alat dan garis panduan yang boleh membantu para pereka dalam merancang tudung. Pendekatan tujuan kajian ini adalah mengenal pasti kehendak nilai estetika berdasarkan keutamaan pelanggan untuk meningkatkan penilaian produk. Kajian ini cuba mengintegrasikan Kaedah Model Kano dan Analisis Prestasi Penting (IPA) untuk mengenal pasti sifat nilai estetika dalam produk berdasarkan keutamaan pelanggan. Nilai estetika berdasarkan keutamaan pelanggan akan mempengaruhi pelanggan untuk memilih atau membelinya. Kaedah tinjauan yang digunakan adalah soal selidik yang dilakukan dalam dua fasa: (1) fasa I; (2) Fasa II (Ujian Nyata). Pada fasa pertama, terdapat 500 responden yang terlibat untuk menyiapkan soal selidik tentang produk yang merupakan bahan dan reka bentuk pertimbangan, motivasi pelanggan dan soalan atribut Kano. Keputusan yang diperoleh daripada kajian ini adalah tentang ciri-ciri reka bentuk profil tudung. Ciri-ciri ini kebanyakannya diklasifikasikan kepada Kaedah Model Kano yang menarik dan yang mesti ada. Ciri- ciri tersebut ialah'Gaya ',' Ketahanan ',' Kemodenan ', 'Kemudahan', dan 'Semasa'.Untuk mengesahkan Keperluan itu, fasa kedua soal selidik adalah mengenai enam belas reka bentuk tudung dalam pasaran semasa. Terdapat seramai 200 responden yang terlibat untuk menyelesaikan soal selidik responden perlu mengklasifikasikan reka bentuk berdasarkan keperluan yang diperoleh dari soal selidik fasa pertama. Pada fasa ini, reka bentuk yang paling disukai oleh responden ialah reka bentuk 8, reka bentuk 10, reka bentuk 14 dan reka bentuk 16 (merujuk kepada Jadual 4.23). Reka bentuk profil akhir terdiri daripada nilai estetik yang dapat menarik para pelanggan.

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ABSTRACT

Nowadays, the fashion designers are creating the scarf design based on the trends. There is no available tools and guidelines that can help the designers in designing the scarves.The purpose approach of this study is to identified the aesthetic value requirements based on customer preference in order to increase the product evaluation.This study thus attempts to integrate the Kano Model Method and Importance Performance Analysis (IPA) to identify the characteristic of aesthetic value in a product based on the customer preference.The aesthetic value based on customer preference will influence the customers to choose or purchase it. The survey method used is a questionnaire which is performed in two phases : (1) phase I; (2) phase II (Real Test). In first phase, there were 500 respondents involved to complete the questionnaires about the product which is material and design consideration, customer motivation and Kano attributes questions. The results gained from this study is about the characteristic of profile design of scarves. This characteristic are mostly classified into attractive-dimensional and must-be attributes by the Kano Model Method which are'Stylish', 'Durable', 'Modern', 'Simple', and 'Up-to-date'.In order to validate the requirement, the second phase of questionnaires included sixteen design of scarves in the current market.There were 200 respondents involved to complete the questionnaires The respondents need to classified the designs based on the requirements obtained from the first phase questionnaire . In this phase,the most preferred design by the respondents are design 8, design 10, design 14 and design 16 (refer to Table 4.23). The final profile design consist of aesthetic value that can attract the customers.

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DEDICATION

Dedicated to my beloved parents, siblings, my supervisors, lecturers and my friends for giving me moral support, money, cooperation, encouragement and also understanding. Thank You So Much and Love You All Forever.

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LIST OF ABBREVIATIONS

CS   -   Customer Satisfaction

DS   -   Customer Dissatisfaction

IPA   -   Importance Performance Analysis

SPSS -   Statical Package of the Social Science

CHAPTER 1
INTRODUCTION

Smythe (2004) states that the design is intentional and define as the process that intended to produce a resolution and does not compromise on teamwork. Lee (2010) claims that, the design process must meet all criteria that customers require and that can increase the value of the business, the product development process and product evaluation. Industrial design and engineering design approach are method that commonly used in industry for product development.

Evans (2016) states that the industrial design is the professional service in order to create and improve concepts and specifications that optimize the function, value and appearance of products and systems for the mutual benefit of both consumers and producers. industrial designers developing concepts and specifications through the collection, analysis and synthesis of data, based on the specific needs of the customer or user. Moreover Michelle (2007), states that the industrial design developed through a creative thinking, logical thinking and scientific uses, assessment and integration of engineering and manufacturing considerations and throughout the entire process, attention to marketing and financial considerations. In addition, the industrial design is also focused on developing design concepts as the completion of a marketable product that aims to ergonomics, usability and aesthetics.

The aesthetic qualities of products are the important factors that can influence the customer satisfaction and product evaluation. Kotler (2000) claims that customer satisfaction is defined as a person feeling when using a product. Usually this feeling is related to the performance of the

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product. This is because the customer satisfaction of a product usually based on many aspects such as quality, performance and aesthetic. The aesthetic experience is very subjective and multidimensional. Different customers will usually have different experience and opinion about the aesthetic value. Rashid et al. (2004) stated that building a one-dimensional perception or whether beautiful or ugly as a single aesthetic liqueur with a scale rating to describe how customers consider about the product quality whether it is suitable or not suitable. In order to optimize the aesthetic quality we need to considered on multiple-criteria problem. However, (Rizzi, 2008; Wang *et al.,* 2007) state this multiple-criteria optimization related to what customers need without considering this feature. The product criteria and customer satisfaction can be taken up as linear or directly proportional, where the higher the customer's satisfaction depends on the higher the perceived criteria quality..

There are a few tools can be used to identify the product criteria that meet the customer satisfaction. One of them is the Kano Model Method. Kano model (1984) is a questionnaire-based model which tries to reveal related attributes for level of consumer satisfaction in the presence or absence of a certain quality (criteria). In both situations of the presence or absence of the quality, five levels of answers are suggested which represent the level of satisfaction from completely satisfied to completely dissatisfied, depending on the feeling of the user. According to Chun (2008), the attractive attribute , must-be attribute, one dimensional, indifference or reversal attribute in the Kano evaluation table can be identified by the combination of the two criteria.

The Kano model is applied to help the designer to fulfilled the customer demand and increase the customer satisfaction by identifying the requirement that can increase the product evaluation to resolve the confusion in a multi-criteria optimization.Besides Kano Model Method, the other tools that can be used to measure the customer satisfaction with the product or service is the Importance Performance Analysis (IPA). According to Martilla (1977), the IPA approach can recognizes satisfaction as the function of two components: the importance of a product or service to a client and the performance of a business in providing that serviceor product .Besides based on Silva (2010),IPA method not only can examines the performance of an item,but it also can determine the importance of that item as a determining factor in satisfaction to the respondent

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.The combination of the importance and performance item client ratings can provide an overall view of customer satisfaction with clear directives for the product management.

Furthermore, in that respect are many applications of Kano Method and IPA such as in manufacturing industries, food industries, and telecommunication industries.Tan and Shen, (2000) claimed that the function of IPA and Kano model analysis, has been used to adjust the improvement ratio for each product or service attribute in the traditional way in order to recognize the importance attribute, that helps to maximize the customer satisfaction in the development of a product. For example, in food industries, the integration of Kano Method and IPA has been applied in the production of black bean. Based on Mazur (2008), the application Kano two-dimensional quality model and Importance Performance Analysis (IPA) can be seen in the production of black bean. In this process Kano and IPAare used to build the reputation of black bean's as a healthy food by identifying quality attributes that meet the customer demand in order to control the attributes effectively. Other than that, these two methods have been used in telecommunication industries as well. For examples, the Kano model and IPA have been applied in evaluating the service qualityof the various brandsof mobile phones. This is one example of the integrated approach that can be as the guidance to help organizations to improve and strengthen the technical features essential, and to facilitate the process of analyzing the results, and increase the customer satisfaction and evaluation of product through the of technical features (Chang *et al.,* 2007).

Based on Shen*et al.* (2000), a process model for designing and developing innovative products was proposed by incorporating the Kano's model technique. The Kano model helps project team members differentiate the type of customer requirements as the one of the important factor to obtain a high understanding of the basic requirements in producing a product. If the customer needs can be identified and be fullfiled, the probability of producing a product that has higher customer satisfaction and product evaluation also increase. The requirement that have been applied toKano Method is then be transformed into the IPA as guidelines for product managers and the design teams to identify the importance ranking of the concept, in creating a new product or new version of existing design. It can be conclude that , this study used IPA and Kano model as a new tool for categorising and diagnosing product quality attributes and providing specific

strategies for attributes in each category. IPA can avoids the limitation of the Kano model in neglecting the attribute performance and importance, while Kano Model can eliminates the weakness of the IPA model in considering only one-dimensional qualities. By applying the proposed IPA and Kano model, the appropriate action strategy for each product quality attribute can be acquired in any product encounters and thus it enables to improve the product quality and to achieve a competitive advantage.

There is no such tools or software that can support the designer to sketch and design their ideas. Most of them, usually used hand sketching to create a design. Therefore, this study is would like to identify the profile design of scarves that influence the aesthetic value and product evaluation using Kano Model and Importance Performance Analysis Method.

1.1 Problem Statement

Based on Killian (2003), the history of headscarves or hijab in Malaysia starting from the beginning of the 7th century AD. The early history of Islam in Malaysia has been spread by immigrants and missionaries who came from West Asia and China. Since the implementation of Islam, the practice is contrary to the religion of Islam begun to be abandoned gradually. Thus, the life of the community at that time also began to change. The headscarves or hijab is something familiar in Islam that usually worn by Muslim women. This culture began to penetrate into the heart of the Malay-Muslims since the late 1970s This has been a generation of Muslims who were inspired by the Islamic revolution in Iran that can topple the Shah Reza Pahlavi secular and backed by the United States. At the same time, Malaysia's rapid modernization process of the building and put the interests of the Malays from the villages so that people move to the city to continue education and job opportunities. Malay women especially get the greatest benefit from the process of modernization at that time. At first, many young and unmarried Malay women from villages are given the opportunity to work, study, and living in urban areas outside the parental control. The agents of propaganda wing of PAS and ABIM in the 1980s emerged as the 'savior' of the Malay woman believed swept away by strong currents of modernization (Isaiah et al., 2007). This was the beginning of the headscarves revolution in Malaysia.

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Headscarves usually worn by Muslim women as a symbol of modesty and privacy. In Malaysia this it is known as scarves (Tudung), in Indonesia it is known as jilbab and the Arabic used the term of hijab. There are many types of scarves in Malaysia such as bowel, Shawl, Pashmina and sheath scarves. Nowadays, the fashion designers are creating the scarf design based on the trends. There is no available tools and guidelines that can help the designers in designing the scarves. Even though there are many types of scarf design in the market, it is quite difficult to find the scarves that fully satisfied the aesthetic characteristic based on customer preference. The designer needs to know the aesthetic value of the scarves that meet the customer requirement in order to increase the product evaluation. This project is about the study of profile design headscarves that influence the aesthetic value and product evaluation using Kano Model Method and IPA. By using Kano Model Method the designer can investigate the customer requirement in the scarves. While IPA can examines the importance of that requirement as a determining factor in satisfaction to the respondent.

1.2 Objectives

The main objectives of this study are:

1. To identify the characteristic of aesthetic value in the scarves design based on customer preference using Kano Model Method and IPA

2. To identify the profile design of scarves that can fulfilled the customers need.

1.3 Scope of the project

This study is focusing on the profile design of scarves that can influence the aesthetic value and product evaluation. Besides, it also covers the application of the Kano Model Method that can help the designer in fulfilled the customer requirement and Importance Performance Analysis

(IPA) in order to identify the importance of customer requirement as a determining factor in satisfaction to the respondent.This study is focusing on the scarves manufacturers and sellers. It also focuses on the varsity students in UTeM customers at higher education institutions in Melaka.

CHAPTER 2

LITERATURE REVIEW

This section describes about the profile design of the product that can influence the aesthetic value and product evaluation, and also the method used which is Kano Model Method and IPA.

Profile design of a product is one of appearance factors that can influence customer's perception of aesthetic value and increase the product evaluation. By understanding the customer requirement can help the designer to identify the characteristic of aesthetic value that can increase the customer satisfaction. In the other words, the designer also can easily produce a product with a good product evaluation.

2.1 Aesthetic Value

Michalos (2013) has defined that aesthetic value is the value that an object, event or state of affairs which is most paradigmatically an artwork or the natural environment that possesses in virtue of its capacity to elicit pleasure which is the positive value or displeasure, the negative value when appreciated or experienced aesthetically. It also can be defined as the quality of beauty and attractiveness of a product. These qualities of aesthetics are composed of opposing qualities in which proportion and pureness are against contrast, and appropriateness is against

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novelty. Beauty reaches maximum when the standard contrast is close to half of the total time of the observation. Based on (Bloch*et al.,* 2003; MacDonald, 2000; Veryzer, 1993), aesthetics in product design consists of visual and non-visual (hearing, smell, taste and touch). However, this study is only focused on the 'visual' aspect of aesthetics.

According to Kieran (1997), the visual aesthetic refers to a value. It also can be subjectively interpreted (Crilly *et al*., 2009) as a voluntary user response (Ulrich, 2006) or can be objectively evaluated (Crilly*et al*., 2004) as an external reality (Khalid and Helander, 2006). Based on Norman (2004), the subjective aspect of aesthetic is related to emotional features of a human. While according to Crilly *et al*. (2004) the objective aspect is more intuitive. Besides Coates (2003) state that, the balance between cognitive and affective aspects, creates positive impression to the aesthetic value.In other words, the appearance of a product is perceived pleasant when it is able to satisfy a consumer in both sentiment and logical aspects of aesthetic (Jacobsen*et al*.,2006; Bloch, 1995) which are linked to the design principles (Kostellow, 2002) as a part of product concinnity (Crilly *et al*., 2004) and human factors (Jordan, 1998), the product characteristics (Breemen and Sudijono, 1999; Langmeyer and Shank, 1994) as a part of product functionality (Verma & Wood, 2001) and usability (Sonderegger *et al.,*2012).

In addition the behavioral aspect of aesthetic value generates the 'attractiveness' (Desmet, 2003; Norman, 2002), while the cognitive aspect creates the 'beauty' (Crilly *et al.,* 2004; Coates, 2003) as the main constituent factors of aesthetics (Khalighy *et al*, 2014).

2.1.1 The importance of aesthetic value

The aesthetic is a significant factor of informing a product design because it can determine the level of success of a product in the market (Postrel, 2001; Perks *et al.*, 2005). According to (Ranscombe *et al*, 2012; Fynes*et al.*, 2005; Yamamoto*et al.*, 1994; Swift, 1997) the aesthetic value is a main factor in increasing the product evaluation and customer satisfaction. Aesthetics also is a first response to a product can persuade a consumer to purchase or not to purchase the product within a few seconds (Ulrich, 2006). This is because, customers can simply purchase a product if they're attracted to the design or colors. Thus the reason that most of the consumers, make their final decision based on the aesthetic of a product that (Schindler and Holbrook, 2003). Besides,by pleasing the appearance of a product also is one of the key reasons for generating positive impressions towards the product (Norman, 2004).Based on (Veryzer, 1995), the aesthetics of a product is a crucial factor in determining the product's identity. This is because, the aesthetic can improve user's perception of product quality (Bloch, 1995). Aesthetics also closely interact with function (Verma and Wood, 2001). So it is generally believed that beautiful and attractive product work better (Tractinsky *et al.*, 2000; Norman, 2002). Therefore, it is widely believed that aesthetics have a significant role in enhancing the quality of product design and the product evaluation.

However, the identification of customer's requirement in need to identify the aesthetic characteristic that can fulfilled the customer satisfaction. Usually, the aesthetic judgmental is link the physical design elements to consumer's perception of the product. The aesthetic characteristic can be identified by analyzing the different aspects of product appearance, perception and its psychological effects such as cognitive and affective, typically and novelty, subjectivity and objectivity, characters and attributes, lastly the functional and emotional.

2.2 Kano Model Approach

Kano model is the techniques to determine the customer satisfaction with product features. This method begins with constructing the questionnaire as the survey. Firstly, the respondents will be asked about the attributes of the product and their opinion whether the product has the attribute sufficed, or does not have the attribute sufficed (Austin, 2006). Kano method has been classified into four categories that are must-be, performance, indifferent and attractive. It is depending on customer reaction to the provided level of functionality. The first features in Kano Method is one-dimensional attribute or also known as performance. This feature is about the ability of a product that can increase the customer satisfaction. The higher the ability that the product can provide, the higher the level of customer satisfaction. The second features is known as the basic expectation or the requirement that a product must have(must-be). This features are the usual features that the customers need. If a product doesn't have this basic expectation features, it will be considered to be incomplete or failed. The next features are attractive features. This feature is known as unexpected features which, when presented, it can give a positive reaction to the customers. The next feature in Kano model is known as indifferent father. This feature doesn't make any changes in the reaction of the product whether it is presence or absence. That means it that the user totally won't care about the features. In order to reduce the cost, the working process on this features should be avoided since it is totally money sinks. For questionable features is about the response patterns that show ambivalence, misunderstanding of the questions or errors made in answering questions. The result is, the same answer is given to both expressions of the same attribute feature or benefit. In other words, the respondent both likes and dislikes the product and the value expressed.

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