



Faculty of Cognitive Sciences and Human Development

**KANSEI RESEARCH ON THE DESIGN OF YOUNG
WOMEN'S WATCH**

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ABSTRACT

KANSEI RESEARCH ON THE DESIGN OF YOUNG WOMEN'S WATCH

Atiqah Bt Ismail

Nowadays, many models of watches have become common in global market. Therefore this research was conducted to find out the relationship between feelings on design and the design elements of young women's watch by applying kansei engineering research methodology. A set of questionnaire consists of semantics differential scale and 24 colour images of women's watch sample were used in the research. The data collected then have been analyzed by using principle component analysis and linear multivariate regression analysis in two stages. The result from principle component analysis shows that watches' design for women can be categorized into four different styles based on customer's perception. This research also has discovered that a different design element is playing a big influence in different watch style based on linear multivariate regression analysis. Designers and entrepreneurs now can understand Malaysian young women's perception on watches design for the local market.

ABSTRAK

KAJIAN KANSEI TERDAPAT REKABENTUK JAM TANGAN WANITA BAGI GOLONGAN MUDA

Atiqah Bt Ismail

Pelbagai jenis jam tangan terdapat dalam pasaran global hari ini. Justeru, kajian ini telah dijalankan untuk mengkaji hubungan antara ciri-ciri rekabentuk jam tangan dan persepsi pengguna terhadap rekabentuk tersebut. Kajian ini telah mengaplikasikan kaedah yang dicadangkan dalam "kansei engineering". Borang kaji selidik yang mengandungi skala "semantic differential" dan 24 gambar berwarna bagi sampel-sampel jam tangan telah digunakan semasa proses pengumpulan data. Kemudian data-data tersebut telah dianalisis menggunakan "principle component analysis" dan "linear multivariate regression analysis" secara berperingkat. Dapatan daripada analisis peringkat pertama, "principle component analysis", mendapati terdapat empat jenis stail jam tangan yang berbeza berdasarkan persepsi dari pengguna. Kajian ini turut mengenalpasti bahawa terdapat perbezaan pengaruh aspek-aspek rekabentuk terhadap jam tangan mengikut stail-stail tertentu melalui "linear multivariate regression analysis". Akhirnya, pereka-pereka dan usahawan-usahawan yang menceburi industri jam tangan bagi pasaran Malaysia boleh memahami kehendak dan persepsi wanita-wanita di sini melalui kajian ini.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Kansei is a Japanese word which means psychological feelings and desires towards a product in human mind. Kansei engineering is a study of consumers' kansei using analytical methods to implement the consumer's desire of a specific product into the design area. It was formulated by Mitsuo Nagamachi on 1970's as a customer-oriented product development method (Nagamachi, 2008). This engineering used to develop products that people mostly want in their mind.

Kansei engineering type 1 is about category classification. Behavioral, standard of living and values analysis used to recognize the product strategy and market. Product strategy in kansei engineering uses main description from consumers, experts, and trade press about the product. The descriptions then divide into aspects until they can be related to physical design properties. Participants who involve in survey will evaluate each product against each kansei

words using a semantic differential questionnaire. Then the result can be analyzed using several statistics elements and analytical techniques. At the end, the correlations between the consumers' perception and product properties can be identified (Barnes et al., 2008).

According to Anitawati et al. (2007), combination of kansei and engineering area called kansei engineering. This technology purpose is to absorb the human desire into product design intention in the direction of fulfilling consumers' satisfaction with the product. Kansei engineering is designed to collect general consumer perceptions towards a product and combine them with the elements of real product design, and then the new proposed design will match with the consumers' need.

Nowadays, every product has various design with different quality in the product design. Therefore, designers and developers should realize users' aesthetics' desire toward each elements of any product to make the product acceptable in the market (Chang et al., 2006). According to Chien (2008), a designer ought to know how their possible clients interpret the style of the visual characteristics for a product before designing the new one, in order to design a product which can give clients a high level of satisfaction.

1.2 Background of Study

Comfort studies are often seen in the human factors domain. A lot of design researches concerning the comfort perceptions of specific product have been conducted using kansei engineering (Nagamachi, 1997). The research or study is relevant when researcher used kansei engineering to evaluate the user's perception. It is because visual response to a product form is not purely perceptual behaviour but will be affected by many psychological factors. Examples of designs which were produced by kansei engineering are high-technology product

design, textile design, footwear design, seat design, toilet design, car interior design and et cetera (Chien, 2008).

One research about affective design of waiting areas in primary healthcare is done by Ayas, Eklund and Ishihara. The study is applying kansei engineering methodology to extract design solution related to specific feelings. Several designs are suggested as affective design by using Correspondence Analysis (CA), χ^2 Analysis, Pareto Analysis and Rough Set (RS) method. Based on the research, interaction between design attributes need to be considered to understand and reflect human feelings in product design (Ayas et al., 2008).

In a research conducted by Kuniaki Nakada (1997), the relationship between design elements and kansei sensibility values in design of earth moving machinery is investigated. The design innovation has been enhanced by the use of the sensibility database. This market research used kansei engineering to conduct factor analysis of high demand products by comparative evaluation using kansei values. The Semantic Differential (SD) method is employed in the research to find the common semantic range of people's perceptions.

Besides, Anitawati, Nor Laila and Nagamachi have conducted a study on perception of online clothing websites. It attempts to explore consumer's emotional responses to e-commerce website and investigate its relationships with website design. The discovery of the relationships will enable the research to strategize a guideline to the design of affective e-commerce website. The research used the idea of kansei engineering to incorporate consumer's emotion into website design. It used 35 websites, 40 kansei words, 60 subjects and 5-point SD scale in order to collect the data for the investigation. Principal Component Analysis is used in order to analyze the data.

1.3 Problem Statement

Recently, watches not only a time piece wrapped around ones hand but they had evolved into becoming a fashion statement and utility devices. Therefore, a person who wants a watch with special functions will choose his or her watch after considering its usage and features provided in the watch (Best Watch Collection, 2010).

Women's watches and men's watches come in several varieties, range from classy and formal to funky and dressed down. When a woman selecting her watch, there are several aspects beyond function to consider and the three of the most important are the watchband, the color and the shape of the watch (Delgado, 2010).

A watch not only can tell us time but also reflects the owner personality. Below is the styles of watches and the personality:

Watch Style	Personality
Watch with different time zones	Fantasy expert
Pocket watch	Good in time management, patient, elegant, romantic
Watch without numerals on the dial	Good at expressing ideas, intellectual, abstract
Designer watch	High status
Not wear watch	Independent
Alarm watch	Responsible, good leader, busy, success

(TheReplicaReview.com, 2010)

Based on the table, different personality traits have specific different watches designs that match the owner's desire. For example, an intellectual person always wears the watch which without numeral on the dial. However, there still got some academicians who can be categorized as intellectual group that wears watches with numerals on the dial.

Nowadays, there is plenty of high fashion and designer accessories for ladies and these include common accessories that compliment apparel such as watches (MagicYellow.com, 2010). Many models of watches have become common in the market today. This situation gives designers challenge to interpret the best design suitable for target customer.

In 2008, Mintel survey on the watch industry noted that women are still likely to view watches as an accessory with many buyers choosing their watch based on looks alone. On the other hand, at the end of the luxury market, there are a growing number of women who are interested in mechanical watches.

The study also found that women are increasingly choosing unisex watches. This is an interesting twist as the wristwatch or more specifically the bracelet watch was invented for women in the late 19th century before being adopted by men (Sissons, 2010).

In women's mind, men wear diamond watches are romantic but they are easy to change. Men with pure gold watches are positive and confident but it is sure that they have too strong desire to show off. Stainless steel men watches are full of masculinity but sometimes they are too brave and harsh (Best Watch Collection, 2010).

According to Duggin, "The Japanese market desires the rare black-dial bubble back especially the dial displaying the alternating Arabic and Roman numerals. The dial alone is worth \$2,000 to \$4,000." The popularity of the different styles varies according to the market (Peter and Theriault, 1999).

In the Malaysia market, it is hard to say whether a watch from traditional or jeweler watch company is preferable to a watch designed by a fashion house. Sometimes it just comes down to a matter of personal taste. Thus, this research is conducted to investigate the classification of watches design by Malaysian young women's perception. It can help designers in Malaysia to know Malaysian young women's classification of watches design.

Kansei engineering is a consumer-oriented technology for product development based on ergonomics and computer science. It has been utilized in a variety of industries and it was highly evaluated as an effective development method incorporating the consumer's demand (Nagamachi, 1995). This engineering principal is suitable to apply in this young women's watch design research.

1.4 Objective of the Study

The purposes of this study are:

1. To find out the relationship between feelings on design as well as the design elements of watches for women.
2. To apply kansei engineering on design of watch for women.
3. To apply principal component analysis and linear multivariate regression analysis in kansei engineering.

1.5 Importance of Study

In today's competitive market, design and branding are keys to product implementation and competition. The study of perception on women's watches design will help watch designers actualize their product form analysis at an early design stage, enhancing the effectiveness of product planning and design specification. It is particularly beneficial to novice designers in Malaysia as it can aid the development of professional design analysis and decision making in product style. In the other hand, it can help customers to search accessory they want.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Everyone wants to enhance their quality of life. They expect to be provided with qualified products and services. Kansei engineering was developed as a consumer-oriented technology for new product development. It has permeated Japanese industries including automotive, electrical appliance, construction, clothing and so forth. The successful companies using kansei engineering get benefits from good sales regarding the new consumer-oriented product.

2.2 Examples of Past Research

2.2.1 Digital Camera

Chien-Cheng Chang (2008) from Huaan University was conducting a research on factors influencing visual comfort appreciation of the product form of digital cameras. Kansei engineering method was applied in this research. Therefore, it has utilized hierarchical grouping tasks and semantic differential experiments to explore the features of product forms that determine visual comfort. There are two stages in the research and they are hierarchical grouping experiment and survey. The hierarchical grouping experiment was conducted to extract the mechanisms that determine the visual comfort appreciation of product form and to select product samples suitable for visual comfort appreciation. The survey was made on strength of the visual comfort appreciation that comes from product form. Finally, a hierarchical framework is offered in different product orders to visualize the relationships between mechanisms of visual comfort appreciation and form elements of digital camera design. The visual comfort perception is then transformed into perfect design specifications for new digital camera design and development.

The research results indicate that a product's visual comfort is evaluated according to its total image, colour, texture, interface, functions, and line elements. For digital camera design, product samples that feature high visual comfort have simple and compact images. The total image of a product form including its high-tech style, unity, simplicity, quality texture, and a proper proportion is the mechanism that determines the evaluation of visual comfort. The research was suggesting design specifications to enhance the degree of visual comfort aesthetics in digital camera design which have a simple image, a bright and harmonic colour scheme, a big-scaled display screen and a quality finish.



Figure 1 Digital camera samples used in the semantic differential experiment



Figure 2 Digital camera samples of high and low degrees of visual comfort

2.2.2 Office Chair

Chen, Yeh and Lin (2010) were performing a study on eco-product form design. The study presents a kansei engineering approach to designing eco-product form for matching a given eco-product image represented by environmental-friendly attributes (EFAs). A consumer-oriented experimental study was conducted to examine the relationship between the key form elements

and the eco-product images of office chairs. In this study, 100 office chairs are selected from various makers and models. 27 representative office chair samples are extracted using multidimensional scaling analysis and cluster analysis. A kansei engineering experiment is conducted to evaluate the point of 27 representative office chair samples match with the given eco-product images which is represented by five representative EFAs derived using morphological analysis. The relationship between EFAs and form elements is established by developing five Quantitative Theory Type 1 models.



Figure 3 Office chair samples