



Identifying Aesthetic Quality Attributes Using Kano Model: Case Study of Malay Women's Office Outfit Design

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DOI: <https://doi.org/10.30880/ijscet.2023.14.02.017>

Received 26 February 2023; Accepted 27 February 2023; Available online 08 May 2023

Abstract: The purpose of this study was to use the Kano model to prioritize the aesthetic quality attributes of modern Malay women's office outfits that have significant effect on customer satisfaction using the Kano model. It is a systematic approach to categorize the customer requirements through a preference classification technique. Overall, 500 customers from the central part of Melaka have been surveyed using a Kano-based questionnaire. The questionnaire in the survey includes customer preferences on purchasing decision, material and design considerations, words that represent customer emotions toward aesthetic attributes and functional and dysfunctional aesthetic attributes. Based on responses, this study has categorized Malay women's office outfits as attractive, must-be, one-dimensional, and reverse. Among the ten quality attributes that have satisfaction indices greater than 0.7, only one aesthetic quality attribute, free size, is defined as a one-dimension requirement. It should be offered in a Malay women's office outfit to avoid customer dissatisfaction. The findings of this study facilitate cloth manufacturers to classify quality features during product design and development.

Keywords: Kano model, aesthetic quality, customer satisfaction, function attribute, dysfunction attribute

1. Introduction

Manufacturers increasingly provide a unique value or characteristic of the product by focusing on customer satisfaction so that they are able to gain competitive advantages (Tama et al., 2015). However, eliciting customer requirements is a major and great pressure for manufacturers, which in turn determines customer satisfaction with the purchased product and repeat purchases. Understanding customer needs has become a continuous effort as customer needs have grown rapidly as a result of rapid technological development (Sidhartha & Thenarasu, 2020). For example, the office outfit for Malay women is no longer restricted to baju kurung. Baju kurung is a traditional outfit that is used for formal occasions, including an office outfit.

Apparel manufacturers must differentiate their products not only by objective qualities such as function and price, but also by subjective qualities (Kohli & Singh, 2020). The subjective qualities are related to the customer's emotion (Kobayashi & Shibata, 2018). With the fashion industry becoming more sophisticated and modern, the apparel industry can be considered one of the areas where consumer emotions are sensitive and subjective (Oey & Gabriella, 2020).

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Thus, understanding what the customer wants requires thorough investigation to gain the customer's perception and attention (Mumcu & Kimzan, 2015).

The aesthetic attribute is one of the promising ways to improve customers' satisfaction specifically in the apparel industry revolution [7, 8]. Sports attire has innovatively changed into casual wear. Sports attire has become a fashionable aesthetic dress. Customers wear golf shirts to watch a movie and Nike jerseys in the shopping center or classroom (Watts & Chi, 2018). In the northwest US, ski and snowboarding sports are continuing to attract attention from women to stay healthy. Many women involved in this sports activity were related to their satisfaction with purchasing special clothing for skating (Worland et al., 2017).

The brand is no longer the winning factor of customer satisfaction, but functional and aesthetic attributes influence customer satisfaction (He et al., 2017). In the marketplace, apparel manufacturers, especially for modern Malay women's office outfits, evolve new styles with distinguishing features in the areas of material, product design, product pattern, and pricing to stay ahead of their rivals. However, whether these characteristics meet the customer requirements of office attire among Malay women remains unanswered. As a result, it is critical to establish a link between customer satisfaction and the quality attributes of office outfits.

The Kano model has been widely used as a tool to identify the aesthetic quality attributes of products that influence customers' satisfaction. However, little research has been conducted about its application in examining the aesthetic quality attributes of fashion design (Salahuddin & Lee, 2020). Therefore, using the Kano model, the focus of this research is to define the aesthetic quality attributes of modern Malay women's office outfits that have the greatest impact on customer satisfaction. The Kano model distinguishes customer preferences and requirements that influence customers' satisfaction into five categories and examines the level of customer satisfaction and dissatisfaction. This study was based on a case in a medium-size apparel manufacturer located in Subang Jaya, Selangor, Malaysia. The company sells specialty apparel which is a Malay women's office outfit. The overall purpose of this study was to identify the aesthetic quality attributes of Malay women's office outfits using the Kano model.

2. Literature Review

2.1 Customer Satisfaction

Customer satisfaction is the ultimate objective for all product and service companies. Customer satisfaction is the essential factor that differentiates a company from others and wins the market. It is a highly subjective assessment that is highly influenced by customers' requirements and expectations (Emrah Cengiz, 2010). Some literature defines satisfaction as the result of confirmation feelings of individual expectations after experiencing a product or service (Lu et al., 2015). Although customers' satisfaction can be achieved in a variety of situations experienced by customers, companies should strategically elicit the customers' requirements. The customers' requirements in the apparel industry are changing over time. At the same time, the industry is under increasing pressure to increase productivity at lower costs without compromising product quality. Retaining customer satisfaction over the long term is critical as it is the cause of growth and business success.

2.2 Kano Model

The Kano model has been found to be an effective tool for establishing a connection between customers' requirements and customers' satisfaction. The market success rate depends highly on the ability to analyze quality attributes of customer requirements (Yadav et al., 2013).

As shown in Figure 1, Kano's model demonstrates that the requirements of value properties change over time. Based on user requirements, the Kano model divides product attributes into four quality dimensions: must be quality attributes (M), one-dimensional quality attributes (O), attractive quality attributes (A), and indifferent quality attributes (I).

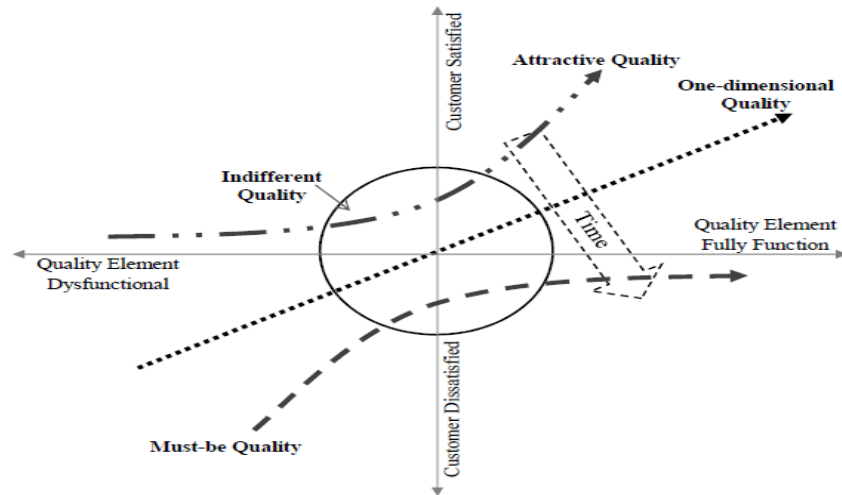


Fig. 1 - The analytical Kano model (Lee et al., 2011)

The M quality attribute refers to primary characteristics and attributes that must be present in a product. The customer is unaware of this attribute's fulfillment. However, if a product is lacking in basic requirements, it will cause high dissatisfaction. The second set of qualities is the A quality attributes. This attribute can provide the user with a great deal of satisfaction. Typically, these characteristics will provide customers with a "wow" factor. Its absence will not result in a decrease in user satisfaction. This is because customers are unaware of features that are not explicitly stated in the product (Vaez Shahrestani et al., 2019). The third quality attribute is O, which has a linear relationship with user satisfaction or dissatisfaction. This characteristic has recently received a lot of attention in the literature [16–20]. Thus, more O attributes should be included in a product (Gupta & Shri, 2018b). The fourth is the I quality attributes requirement, which should be avoided in any product as it does not have any impact on satisfaction. The fifth is the R quality attributes requirement. If it is present, customer dissatisfaction will increase.

3. Literature Review

3.1 Sample and Data Collection Procedure

For this study, a Google Form (online) survey was used. The author's social media accounts on Facebook and WhatsApp were used to distribute the link of the online survey. The questionnaire was first pretested by three experts to ensure its clarity and consistency. Two experts were from academics that have experience related to product design and development and have more than 5 years of experience, and one expert came from a medium-sized apparel manufacturer. The survey began with a brief introduction to the project, the purpose of the questionnaire consent form, and eligibility to participate in the study. The survey was distributed from Mac 2nd to May 30th 2019 to 500 respondents that were selected through a simple random sampling method.

3.2 The Questionnaire

The questionnaire consisted of three sections: (1) demographics; (2) purchase motivation questions; and (3) 27 questions on 14 quality attributes. The list of 14 aesthetic quality attributes was prepared through content analysis of the website of the apparel manufacturer and interviews with the company's experts. The experts have been explained and guided by the authors on the definition of aesthetic and its related words, which have been adapted from Chattaraman and Ruud (2006) and Avikal et al., (2018). The 14 aesthetic quality attributes included ablation friendly, cotton material, printed pattern at the bottom area of textiles, free size, washable, colorful variations, single color variations, limited edition, breastfeeding friendly, and beading. The questions for these aesthetic quality attributes were developed in such a way that they are derived from a pair of functional and dysfunctional questions. The functional questions refer to the positive customer's reaction if the quality attributes exist. When the quality attributes are missing, the reaction is a dysfunctional question. The participants were asked to respond to their satisfaction with 14 quality attributes of a modern Malay women's office outfit using a five-point Likert scale ranging from "I like it that way" (1) to "I dislike it that way" (5).

3.3 Data Analysis Procedure

The customer preference analysis is measured by the answer for each paired question (positive and negative question). If a feature has a score of "I like it that way (Likert scale-1)" for a positive question and "I dislike it that way (Likert scale-5)" for its negative question, this feature's relationship in the Kano model is interpreted as an O category.

The Kano evaluation table that is used to categorize the quality attributes classification is referred to by Akmal et al. 2017 (Akmal et al., 2017).

This model was enhanced by the creation of the satisfaction (SI) and dissatisfaction (DI) indices (Sauerwein, Bailom, Matzler, and Hinterhuber, 1996). The SI indicates the strength of product features that may influence customer satisfaction. The DI demonstrates the extent to which nonfulfillment of product features influences customer dissatisfaction (Mkpojiogu & Hashim, 2016). The following is the SI and DI formulation (Berger et al., 1993):

$$SI = (A+O) / (A+M+O+I) \tag{1}$$

$$DI = (-1) (O+M) / (A+M+O+I) \tag{2}$$

$$Total\ satisfaction = SI + DI \tag{3}$$

The coefficients in SI range from zero to one. When the performance level of quality features increases, the greater the impact on consumer satisfaction. When the performance level of quality features decreases, the greater the impact on consumer dissatisfaction, according to DI.

In evaluating the results, the frequency of the answers is evaluated. Ideally, the maximum value of O, A, M, I, R, and Q must be adopted. However, this study follows the rules of kano as suggested by (Sauerwein, E., Bailom, F., Matzler, K. and Hinterhuber, 1996), which states that the priority of the improvement must be considered $M > O > A > I$.

Internal consistency of the questionnaire contents was measured by Cronbach’s alpha coefficient. Cronbach’s Alpha for the Functional questions is 0.724, meanwhile, the value of Cronbach’s Alpha for Dysfunctional questions is 0.701. Both values prove that the Kano questions are reliable since they over 0.7 (Golafshani, 2003). SPSS software was used to run the quantitative data.

4. Results and Discussion

4.1 Sample Size Characteristics

The questionnaire was distributed to 500 respondents, of which 89 out of 500 respondents were male (17.8%) and the rest, 411 respondents were female (82.2%). More than half of the respondents were aged between 21 and 30 years old (n = 368), which indicates that these days’ younger generations lead sustainable fashion. The majority of respondents were working in government sectors (n=251). As a result, this trend works to the benefit of garment manufacturers that produce "aspirational" modern office outfits, especially for younger buyers (Shroff, 2019). Table 1 summarizes the socio-economic profile of respondents in this case study.

Table 1 - Respondents’ socio-economic profile

Particulars	Frequency
<i>Gender</i>	
Male	89
Female	411
<i>Occupation</i>	
Government	251
Private	231
Self-employed	8
Retiree	10
<i>Age</i>	
< 20	70
21-30	368
31-40	58
40 and above	4

4.2 Results of Purchase Motivation Question

The objective of this section is to investigate the motivation of customers when they decide to buy the office outfit. The participant was asked to select the most suitable adjective word to describe the reason for buying an outfit. The aesthetic words are stylish, up-to-date, durable, unique, modern, and simple, and they are adapted from Chattaraman and Ruud (2006) (Chattaraman & Rudd, 2006), Avikal et al., (2018) (Avikal et al., 2018). Each word has a definition

adopted from the online Merriam-Webster Dictionary. They generally thought that when buying a product, it should be 'durable' (19%), 'stylish' (18%), 'unique' (18%), 'modern' (16%) 'up-to-date' (15%), and 'simple' (14%).

4.3 Results of Quality Attribute Questions

The purpose of this analysis is to investigate the aesthetic quality attributes that can enhance preference and satisfaction. In the first analysis, all the quality attributes were considered as 'I' quality attributes. According to Madzik et al. (2019) (Madzík et al., 2019), I mean that customer fulfillment or nonfulfillment does not influence satisfaction or dissatisfaction. Thus, this study eliminates the I quality attributes.

Out of 13 quality attributes, there is one quality attribute that is necessary to satisfy the basic need (M) and as performance attributes (O) of apparel design, respectively. The ability to be washed (K12) is defined as M quality attribute (n= 101), and this is the minimum level of quality attributes that the apparel manufacturer must reach. Otherwise, all other quality attributes are useless (Shahin et al., 2017).

A free-sized cloth (K7) quality attribute is categorized as an O quality attribute (n= 110). This is the standard type of attribute that customers search for if they want to buy an office outfit. The O quality attribute is parallel to the situation of obesity and overweight in Malaysia (Shyam et al., 2020). These results represent that most respondents in this category are obese and overweight.

From the perspective of respondents, there are five attributes of which were classified as the 'A' quality attributes: 'ablution friendly' (K1), 'a pocket on the side' (K4), 'easy to iron' (K5), 'printed pattern at the bottom' (K6) and 'breastfeed-friendly' (K8). The summary of quality attributes classification is presented in Table 2.

Table 2 - Quality attributes categorization

	Quality attributes	M	O	A	R	Q	Category
K1	Ablution friendly	44	43	104	29	14	A
K2	Cotton material	31	27	52	66	18	R
K3	A cuff design	21	17	47	90	37	R
K4	A pocket on the side	51	36	63	60	27	A
K5	Easy to iron	75	96	101	39	28	A
K6	Printed pattern at the bottom	45	75	91	58	24	A
K7	Free size	52	110	67	87	12	O
K8	Breastfeed friendly	30	16	95	79	53	A
K9	Full of beading	49	19	52	89	68	R
K10	High quality material	54	56	85	123	45	R
K11	'Up-to-Date'	36	83	67	117	41	R
K12	Easy to wash	101	62	58	97	15	M
K13	Plain color	24	12	61	123	19	R
K14	Color variation	95	10	50	96	47	R

Another interesting result from Kano for the garment manufacturers is the customer satisfaction and dissatisfaction index. There are 10 aesthetic quality attributes with a customer SI value greater than 0.7: Ablution-friendly (0.77), cotton material (0.72), a cuff design (0.75), easy to iron (0.72), printed pattern at the bottom (0.79), free size (0.77), breastfeeding friendly (0.79), high-quality material (0.72), high-quality material (0.81) and plain color (0.75).

4.4 Findings

The overall findings of the study related to individual quality attributes are found in Table 3. Due to limited space, only several aesthetic quality attributes are presented. It provides an overview of the identified impacts on customers' satisfaction in cases when a specific aesthetic quality attribute is met or not met. The table also provides an overview of other findings that were obtained as a result of employing the methodology. The study's findings are consistent with (Gupta & Shri, 2018; Mkpojiogu & Hashim, 2016; Salahuddin & Lee, 2020) indicating that the Kano method can be used by industrial practitioners because it is a systematic method for eliciting customer requirements based on the voice of the customer, with the ultimate goal of providing satisfaction and delight.

Table 3 - Effect of aesthetic quality attributes fulfillment or unfulfillment on Customer satisfaction for a modern Malay office outfit

	Quality attributes	If fulfilled	If unfulfilled	Other findings
K1	Ablution friendly	The average level of satisfaction	The average level of dissatisfaction	Positive and negative feedback have a weak relationship.
K5	Easy to iron	Highest potential of customers' satisfaction	High impact on dissatisfaction	Most important quality attributes for customer
K6	Printed pattern at the bottom	Highest potential of customers' satisfaction	Average rate of dissatisfaction	One-dimensional quality attribute
K7	Free size	High influence on customers' satisfaction	High influence on dissatisfaction	Regardless the pattern, this quality attribute should be offered to customers.
K8	Breastfeed friendly	The average level of satisfaction	It has a smaller impact on dissatisfaction.	Attractive quality attribute
K9	Full of beading	Very low influence on satisfaction	Low rate of dissatisfaction	Customer does not care about the type of material, indifferent or reverse attribute.
K12	Easy to wash	The average level of satisfaction	High impact on dissatisfaction	Positive and negative feedback have a weak relationship.

5. Conclusion

This article investigated customers' preference towards aesthetic quality attributes and their relationship with customers' satisfaction by classifying the customers' preferences into the five quality categories. The findings of this study presented that 10 quality attributes of Malay women's office outfit have customer SI more than 0.7. The study identified three types of aesthetic quality attributes: one-dimensional, must-be, and attractive, that may influence customer satisfaction. It has been observed that the maximum number of requirements are categorized as attractive categories: ablution-friendly (K1), a printed pattern at the bottom area (K6), material that is easy to iron (K5) and easy to wash (K12), which shows that their presence will delight customers and their absence will not matter. One attribute belongs to the one-dimensional category and has a free size (K7). The apparel manufacturer should ensure they have the capacity to provide these quality attributes to customers without any deviation, which shows that their presence can create high customer satisfaction. All customers expect that the option of free sizes should be offered in any design of Malay women's office outfit. The proportion of the reverse category is high, which may be a cause of worry and concern for the apparel manufacturer. Kano's model, employed in this study, will enable the apparel industry to obtain valuable information about customer needs. Also, it helped in analyzing key quality attributes to make better decisions on quality strategies that have a major impact on customer satisfaction.

This study is limited in terms of the questionnaire, which seems confusing to the participants, sample size, and ranking the quality attributes. In the future, these limitations can be improved by changing the sampling size method and adopting another tool of decision making such as the analytical hierarchy process (AHP) for ranking the quality attributes.

Acknowledgement

The authors would like to thank the Faculty of Mechanical and Manufacturing Engineering Technology for their support.

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