

# Customer Choice of Colour Elements in Relation To Physical Product Appearance

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## Abstract

Effective learning experiences require the use of interface design, an important aspect of interaction design. From an education point of view, users are in control of the different aspects of the interaction. The literature review reveals that scholars have just begun to understand the role of interface design in the teaching and learning processes. The research were conducted by collecting data via questionnaires given to the target consumers which are chosen from the range of age between 18-50 years old, where the correspondents are divided into 3 groups with different selective profession categories. Findings were proposed to assist designers and practising designer with a better understanding specifically in designing and developing a product design that emphasizes on its appearance.

**Keywords** Colour influences, product design choices, product physical appearance

## Abstrak

*Pengalaman yang berkesan memerlukan penggunaan reka bentuk antara muka. Dari sudut ilmu pendidikan, pengguna mengawal aktiviti interaksi tersebut. Kajian literatur menunjukkan bahawa para cendekiawan baru saja memahami peranan reka bentuk antara muka itu dalam memudahkan proses pengajaran dan pembelajaran. Kajian ini telah dijalankan dengan mengumpul data melalui soal selidik yang diedarkan kepada pengguna sasaran yang dipilih daripada pelbagai berumur di antara 18-50 tahun, yang dibahagikan kepada 3 kumpulan dengan kategori yang berbeza mengikut profesion terpilih. Hasil kajian ini dapat membantu para pereka terhadap kefahaman yang lebih khusus dalam mereka bentuk dan membangunkan reka bentuk produk.*

**Kata kunci** reka bentuk antara muka, pengajaran dan pembelajaran

## INTRODUCTION

Successful product designs are meant to survive continuously in today's competitive market. It determines the aesthetic values of a product, including its colour, brands, and the entire appearances. For the consumer, attractive design and the product appealing are very important in their decision making before purchasing it. This research focuses on the appearances of colour on a particular brand of product which responded to consumer choices. Therefore, this research addresses a key aspect when involved with an element of choosing a correct colour in the product designing process by designer. The subject of beauty has been studied for centuries, but yet, there is no scientifically comprehensive theory that explains what constitute aesthetic experiences (Leder et al., 2004). Colour categorized in aesthetics has been studied and there is no concrete evidences to show that colour will affect consumer choices in product purchasing decision.

This study investigate if colour elements influences, consumer will be asked to indicate opinion on impression (how the product stands out), emotion (what people feel) and appreciation (how the product appeals). The first question is concerned with the consumer perception towards physical of product which involved colour from the particular brand. The second research question concerns about designers understanding of users, and to know how consumers perceive the product which will contribute to more efficient product development processes and the design of better products. The finding can be used by designers as reference when designing and formulating a technique in creating new products. In other word, the knowledge gained from this research is relevant for product design development and probably has the ability to support other design work categories.

### **Literature Review**

Previous studies have investigated what information derived from consumer inferred by looking at a product, thus from the product appearance (Creusen 1998). Product appearance in this particular area can be categorized in various meaning including its colour and physical product as a part of it. According to previous study, many consumers derived their pleasure from the form or the appearance of the product chosen (Creusen & Schoormans, 1998). This is supported by (Schoormans, Berge, Laar & Berg-Weitzel (2005) which stated that the product appearance attributed together will provide the consumer with overall impression of the product itself. Prior to discussing this research, the physical product may be characterised by its dimension, texture, geometric materials, and details (De Sausmarez, 1983; Hannah, 2002; Scott, 1951). Aspects such as the perceived novelty, style and personality of products are not considered here to be the characteristics aspects of the product because they are not the objectives qualities of the design. Furthermore, the subject of beauty has been studied for centuries, but yet, there is lack scientifically comprehensive theory evidence devotes to constitutes an aesthetic experiences (Leder *et al.*, 2004)

Based on preliminary research, new information and problems have been identified. The alternative hypothesis colour responses either in brand or physical product were resulted in which more influence to the consumer perception. This alternative hypothesis

suggests the following specific hypothesis for this study (H1): colour influences consumer perception; and (H2): Physical product influences consumer perception.

This research is significant to the designers which will provide information towards an educational approach whereby it helps in producing new product development. Knowledge in appearance attributes are perceived by consumers in a product design which can help a designer to communicate pre-specified meanings of a product (Blijlevens, Creusen & Schoormans, 2009).

### ***Colour Element***

When consumer sees a product appearance, consumers perceive certain physical properties that together make up the design of the product for example colour, shape, texture and line (Blijlevens, Creusen & Schoormans, 2009). Certain combination of colours, materials and other physical aspect gives a product a look that can be described by a certain appearance attribute (Brunswick, 1952).

Colour also has a different meaning and perception in different context. Different people are having different perception and colour can be very subjective, and must therefore, be unpredictable. For example, red colour might be someone favourite colour but another person might hate it. Generally, marketers noticed that colour has a strong power to create brand image, affect the buyer's decision making process and change the mood of consumers (Ackay, Sable & Dalgin, 2012). Furthermore, colour has the potential to affect a consumer's overall perception of a product and the persuasiveness of their purchase decisions (Sable & Akcay, 2010).

### ***Characteristic of Product Appearance***

Design refers to the organisation of elements of an object, and aesthetic are inherently linked since the design physical form of a product includes aesthetic aspects of the product such as colour, shape, accessories and others. In this research, a brand is identified as a character as proposed by Aaker ((1995). He suggested that a brand as a character must be alive. The specific brands are chosen for this research as it is very important and well known to consumer as they are already familiar to a particular brand. It is easy to name a number of brands that are not only known for high quality products but also for their recognisable design. These brands use specific design features consistently over their product line-ups. Through design consistency, brands can become solid and unmistakable (Karjalainen, 2007).

In providing a good product innovation to consumers, the success of this product in the market is determined by its aesthetics appeal, the pleasure it creates, and the satisfaction to the consumer (Md Hashim, 2012b). Previous studies in product innovations have not focused upon these customer emotions and this aspects should be considered earlier in the design process (Khalid, 2006; Khalid & Helander, 2004).

### ***Impression (How the Product Stands Out)***

Impression is about awareness of product presence (Anders, 2001). The subject of beauty has been studied for centuries and beauty is considered to be an objective

property of the stimuli under consideration. Certain lines, proportions, shapes and colours are believed to be inherently attractive (Cupchik, 1999). Each object will have an ideal form, which once attained will tend to be considered attractive by everyone. Its impression plays an important role and crucial to its success (Md Hashim. 2012a). A product that is able to communicate a certain meaning through their product appearance by its presence, will have an advantage in the market and increase the product's chance of success to the users (Blijlevens, Creusen & Schoormans, 2009; Md Hashim, 2009).

### ***Emotion (What People Feel)***

Product emotion basically is about what people or users feel towards products. Feelings for product and a set of abstract concepts, for example like love, fear, happiness, sadness are referring to a particular set or pattern of feelings (Anders & Nabo 2002). Different people feel different emotions towards a product, and emotions can influence the behaviour of the user and make attractive things easier and more satisfying to use. Currently, many products have practically reached their limits of technical functioning; they can no longer be differentiated by means of their functionality. As a result, emotional aspects of product design are becoming more and more important.

### ***Appreciation (How the Product Appeal)***

How the product appeals is an appreciation of product recognition that describes the aesthetic values expression of admiration, approval or gratitude. Appreciation is about being rewardingly appealing which represents beautiful and pleasantly different representation of characteristic (Anders & Nabo, 2001). The above characteristics of product appearance provide an overview of the colour significance which categorized in the products aesthetics aspects. This important element is considered as the trigger of buying decision based on consumer response. As suggested by Desmet (2002), these element can be distinguished into three aspects: 1) aesthetic response: concerned with the attractiveness (or not) of the product; 2) semantic: concerned with evaluating qualities like function and mode-of-use; and 3) symbolic: what the product says about the owner/user. In regard of this research, colour element is considered as an important aspect to be investigated in the relation to its influences towards consumer choices.

### ***Methodology***

The primary focus of this research is to use a qualitative study to investigate whether the nine elements in the physical product of consumers are distinguished in consumer's perception. In addition, it is assessed whether colour sufficiently describes the way in which consumers use particular brand of product in their purchasing decision.

### ***Research instruments***

Data were collected using questionnaire that contains three colour elements as to achieve the research objectives. The questionnaire then were divided into five sections with 30 questions focusing on impression, emotion, and appreciation and four questions

about respondents' gender, age, occupation and experience. The questionnaire includes pictures of mobile phone from a particular brand. The brands consists Motorola, Nokia and Sony Ericson in different colours. The intention of these questions is to understand whether the appearance of physical elements of colour affected the respondent's responses. Respondents are required to provide their responses for the entire product based on the scales to matrix questions which indicate the perception level of the consumers.

### ***Sampling design***

This study uses cluster sampling as the selected sampling design. Since it is known that product judgment can be influenced by background factors such as age, education and socio economic status, students are selected to form a relatively homogenous group (Babbie, 1990). The respondents are chosen due to its simple access and consume less time in gathering the required information. Furthermore, a complete sampling frame is not required to perform this technique. To employ cluster sampling in this study, the group is first divided into sub-group called clusters. By having a set of similar respondents, it is hoped that the results of the survey could be more easily interpreted.

**Table 10.1** Total respondents.

<i>Group</i>	<i>No. of respondents</i>	<i>No. of respondents replied</i>
Students (university/ college)	10	6
Staff of Academic (university/ college)	10	2
Practitioner (company)	10	6
Others	20	16
<b>Total</b>	<b>50</b>	<b>30</b>

### ***Research Context***

The study was conducted in three different groups of profession manner and range of age between 18-50 years old. In this case, different groups of respondents represented the cluster such as random consumers, practising designer and designer. Each cluster consists of approximately 5 to 10 people.

## **Result and Discussion**

### ***Frequency Distribution Analysis***

The frequency data are represented using a pie chart for an easy reference analyzed from the SPSS and Microsoft Excel as to describe the analysis gathered from the survey. The tables indicated the analysis from the respondents. The demography questions regarding gender, age, occupation and experience in design then were elaborated.

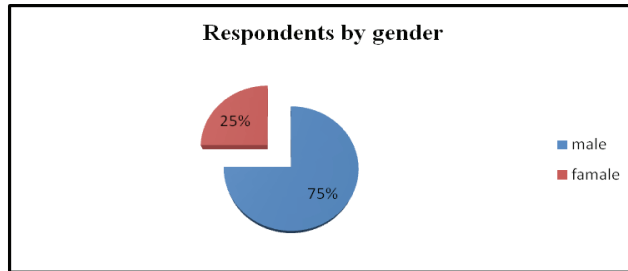


Figure 10.1 Respondents by gender.

Respondents in this research show that the highest numbers of respondents are male with 75%. On the other hand, 25% of the respondents are female.

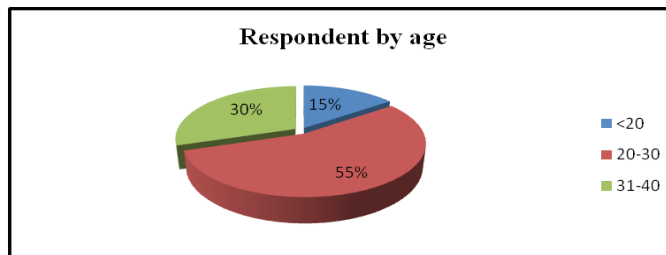


Figure 10.2 Respondents by age.

Figure 2 above describes the frequency distribution of age. The respondents are divided into four groups with different status of occupations. From the chart, 15% of the respondents are aged below 20 and most of the respondents are students. Most respondents are from the age of 20-30 with 55% and 30% is coming from the age of 31-40, which is most of them is practitioner.

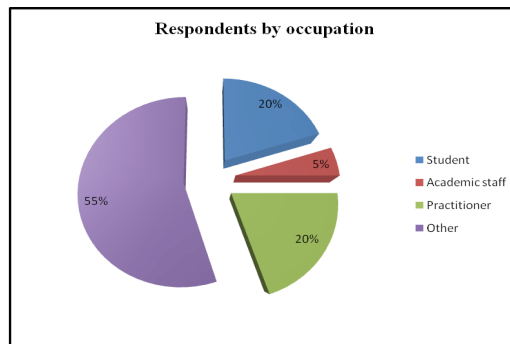
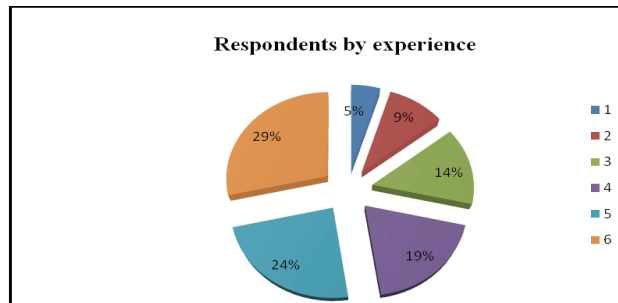


Figure 10.3 Respondents by Occupation.

Figure 3 describes the occupation of the respondents. The respondents are divided into four groups. Most of the respondents are from 'other' band with 55% and the second highest is students and practitioner with 20% each. The Academic staff band falls into last place with only 6%.



**Figure 10.4** Respondents by experience.

Figure 4 shows the respondents' experience in design by years. The highest respondents' experiences in design are six years with 29%. Five years of experience in design contributes 24% of the total percentage. The lowest experience in design is 1 year with only 5% of the respondents. 4 years of experience falls in the third place with 19% and 14% of the respondents with only 3 years of experience falls in the fourth place.

### *Descriptive Analysis*

**Table 10.2** Mean Scoring in Characteristic.

	<i>Mean</i>	<i>Std. Deviation</i>
Appearance	2.25	0.639
Shape	2.65	0.745
Texture	2.80	0.834
Look	2.40	0.598
Style	2.90	0.968
Size	3.20	0.951
Function	2.30	0.801
Ease of use	2.25	0.910
Attractiveness	2.70	0.865

It can be seen from the above table 2 that the respondents have selected 'size' as an important characteristic of a product with the highest mean score of 3.20. This is followed by the second highest 'style' with mean score of 2.90. The third place of the perception goes to 'texture' with mean score of 2.80. Then, the fourth is 'attractiveness' with mean score of 2.70. The fifth, sixth and seventh are the perception towards 'shape', 'look' and 'function' with mean score of 2.65, 2.40 and 2.30 respectively. 'Ease of use' and 'appearance' is both with mean score of 2.25. The details are translated into the below chart as to give a better and clearer picture.

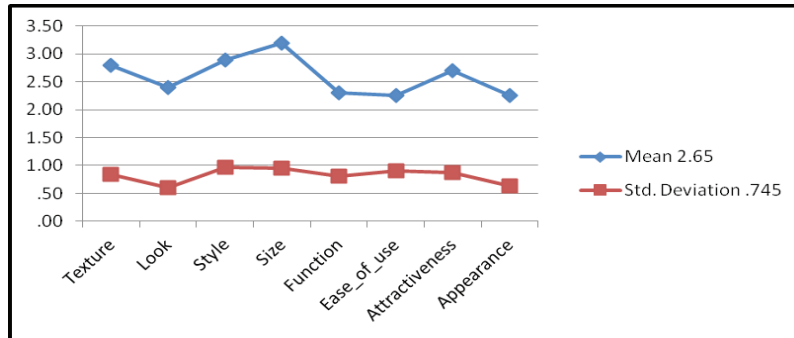


Figure 10.5 Mean Scoring.

Table 10.3 Mean Scoring in Emotion.

	Mean	Std. Deviation
Appearance	2.30	0.92
Shape	2.65	0.81
Texture	2.65	0.88
Look	2.35	0.88
Style	2.40	0.88
Size	3.15	0.99
Function	2.50	1.00
Easy to use	2.65	1.23
Colour	2.50	1.19

It can be seen from the above table 3 that the respondents have selected 'size' as an important aspect in emotion when selecting a product with the highest mean score of 3.15. This is followed by the second, third and fourth place of the perceptions towards 'shape', 'texture' and 'easy to use' with mean score of 2.65 each. Further the fifth and sixth are 'function' and 'colours' with mean score of 2.50 each. The seventh and eight are the perception towards 'style' and appearance both with mean score of 2.40 and 2.30. The details are translated into the below chart as to give a better and clearer picture.

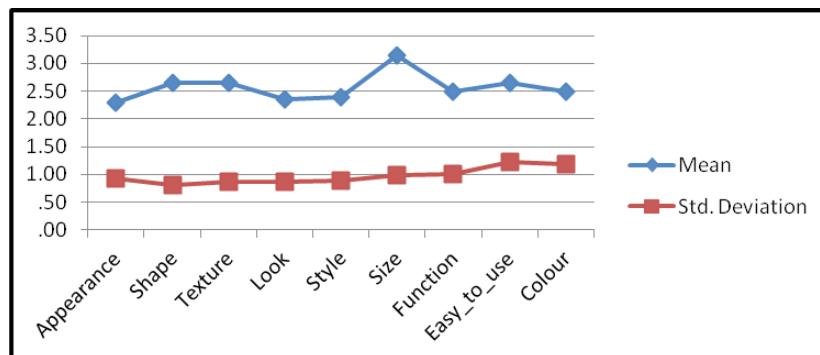


Figure 10.6 Mean Scoring in Emotion.



### *Descriptive Analysis*

This study has taken a position that respondents have to evaluate their opinions about the products based on three primary colours which are blue, red and yellow. This is to show an appreciation towards the product appeals. This is to show the closely matches to what people like and how the products appeal.

Score is divided to five numbers: 1 indicates not important, 2 indicates less important, 3 indicates important, 4 indicates very important and 5 indicates extremely important. Respondents perceived the colour as chosen and as an appreciation aspect of product appeals. Yellow colour shows 50% important to respondents and it is the most attractive colour in products appeals.

**Table 10.3** Attractive.

Attractive	Blue	Red	Yellow
Not important	30		
Less important	10	5	10
Important	20	40	50
Very important	30	45	35
Extremely important	10	10	5

The table below shows that respondents think that line is an important factor in product appeals. 65% of respondents selected yellow and red in second place with 45%. An additional 40% mentioned that line of the physical product did not reflect their choice on it because other aspects are more important to them.

**Table 10.4** Line.

Line	Blue	Red	Yellow
Not important	10		10
Less important	40	30	15
Important	40	45	65
Very important	5	25	5
Extremely important	5		5

The table below shows that respondents think aesthetic is important factor in product appeals. 65% of respondents chose yellow and 35% chose blue and red in second place with 45%.

**Table 10.5** Aesthetic.

Aesthetic	Blue	Red	Yellow
Not important			10
Less important	30	30	15
Important	35	45	65
Very important	30	25	5
Extremely important	5		5

The table below shows that respondents think elegant is an important factor in product appeals. 55% of respondents selected yellow and blue at second place with 40% and shows that respondents think red colours is important and very important with 35% each.

**Table 10.6** Elegant.

Elegant	Blue	Red	Yellow
Not important	10		
Less important	30	20	15
Important	40	35	55
Very important	5	35	15
Extremely important	15	10	15

The table below shows that 45% of respondents think feminine in blue colour is less important and red is important factor in product appeals. 65% of respondents choose yellow and put a place between important to extremely important.

**Table 10.7** Feminine.

Feminine	Blue	Red	Yellow
Not important	10	15	15
Less important	45	15	15
Important	30	45	35
Very important	15	10	20
Extremely important		15	15

The table below shows that respondent's ranked masculine is an important to extremely important factor in product appeals. 80% of respondents choose blue and 85% choose yellow and respondents think red is more masculine colour with 90%.

**Table 10.8** Masculine.

Masculine	Blue	Red	Yellow
Not important	10		
Less important	10	10	15
Important	45	50	30
Very important	15	25	25
Extremely important	20	15	30

The tables below shows that respondents have to choose which brands are more likeable. From the three brands listed, respondents chose Sony Ericsson with mean score of 3.10, Nokia is the second highest with mean score of 3.00 and Motorola is the lowest to be like with mean score of 2.75.

**Table 10.9** Trusted Brand.

Brand	Mean	Std. Deviation
A	3.10	1.119
B	2.75	1.020
C	3.00	1.214

From the table below shows the Impression and Emotion aspect, Nokia is the most likely selected by respondents with mean score 3.70 and 3.65. While Sony Ericsson is the most likely In Appreciation aspect by respondents with the highest mean score of 3.75.

**Table 10.10** Feeling towards Brand.

Brand	Impression	Emotion	Appreciation
A	3.40	3.55	3.75
B	3.15	3.10	3.00
C	3.70	3.65	3.65

## Conclusion and Recommendation

The result of this research indicates that colour is an important element to consumer product purchasing. With the possible variations of demographic differences among the sample size of 30 respondents, the intention of this research is to distinguish the levels of importance elements of product characteristics namely colour attributes, and to test for possible ages, gender and ethnic group differences among respondents towards product. The results reveal highly significant differences for some of the measures used, with indications of strong age differences and gender.

On the basis of the results, it would be reasonable to extend to the concept of product controls the emotion of what people feel. As consumers, the purchasing decisions are based on practicality of a product such as cost and functions however we are also influenced by our emotional responses (Ackay, Sable & Dalgin, 2012). Given to this judgment, it is quite often influenced by emotional responses, the product image is important attributes to be considered in product design.

The results indicate that young respondents are more pronounced to be openness to the experiment with colour rather than older respondents, reflecting an age's effects. Yet, it is still possible to distinguish levels of importance when it comes to how people appreciate colour. In conclusion we can say that colour is important towards the physical appearance of the product because we found that in appreciation towards product appeals aspect where most of the respondent chose yellow in most of the categories regardless masculine where red is more attractive. These findings are supported by the research of Brunswick (1952), which indicated certain combination of colours, material and other physical aspect give a product look that can be described in different appearance attribute.

The results also show that the most trusted brand is 'A' namely Sony. It was rated favorably by respondents considering their experience with the product, and found

that Brand A is having the most attractive colour and they highly appreciate the overall physical of the product. This indicated that consumers choose brands that they like, make them feel good, and trusted. A good brand will win customer loyalty and give negotiating power to the supplier and therefore an expression of competitive advantage.

As indicated above, the main finding is that colour element is a major influence on our views and emotions when perceiving a product highlighting the brand impressions on how the product stands out. For designer, it is necessary for them to build a good understanding of their users and explore what it is that attracts them to a particular product. Supported by Nathan (2005), which stated that the designers use their skill, training and experience to produce products that induce a positive aesthetic impression. In regards, colours carry as much symbolic power as the specific objects of the design. As stated, the appearance of a product influences consumer product choice in several ways (Schumacher, 2007).

This research concludes that the understanding of color choice and responses of consumers for various products has become very complicated because consumers have developed a wide range of colour associations for various products. Great product design is essential in today's competitive marketplace. It determines the aesthetic properties of a product, including the colour, the shape and indeed, the entire form. Careful design is essential for fuelling a product with the qualities it will take to sell.

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