# Consumer Purchasing Behaviour of Emotional Design in e-Commerce

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## ABSTRACT

When we touched about consumer purchasing behaviour through emotional design, we refer to the three significant attributes; emotion, reasoning, and perception. Then, when we explain further about the emotional design, we are about to touch on the three levels of design; visceral, behavioural, and reflective, respectively. Designing something means designing the emotion and thus, create a vivid and symbolic image of high artistic value. The concept of emotional design is applicable to e-Commerce, an area that is booming nowadays as a result of the significant competition of technology. The findings in this research can be used as a reference in developing an impactful website which will trigger the purchase on the Internet.

**Key words:** Emotional design, e-Commerce, Emotional Intelligence

## 1. INTRODUCTION

Nowadays, e-commerce is becoming such a big industry since a lot of people prefer to do online shopping. Most people have their own smartphone. A lot of transactions can finally be performed on the tips of our fingers. This extends the potential of e-commerce globally. E.g., Shoppee, e-Bay, Lazada, Amazon.com, and so forth. Commerce is the process of exchanging goods and services that mostly happens on a massive scale. While, e-commerce, on the other hand, is where the commerce process is electronically performed, which is over the Internet. Rita et al. [1] proven that three dimensions of e-service quality affect the overall quality of the service. There are the website design, security or privacy,

and also fulfillment. In addition to this, customer service is not really affecting the overall e-service quality. The rise of e-commerce is causing the brick-and-mortar stores to slowly closing down.

Emotional design potentially triggers the desire in online customers to perform the purchase. Different designs potentially brought different emotions to online customers. Nowadays, there exists significantly increasing competitive markets, which put pressure on the teams of product development to come up with the design of products, which in fact exploits an emotional connection to users in making sure that they are distinctive from their competitors [2]. Francalanza et al. [2], argued that a new approach to education is needed in minimizing diverse designer mindsets.

Brom et al. [3] investigated the two emotional design principles, the anthropomorphizing graphic and / or adding up appealing colours to multimedia learning materials. They then found strong evidence that those two enhanced learning [3]. A designer has to come up with an appealing design to induce a positive emotion among the users of an e-commerce system. Mayer and Estrella [4] coincided that emotional design refers to redesign the graphics in a multimedia lesson to increase personification and make sure that the important components in the lesson are visually appealing.

According to Kumar et al. [5], individuals with high emotional intelligence (EI) are those who proved to be able to manage their emotions properly. Low EI students tend to be attracted to vibrant colours and characters that induce positive emotions. Whereas, high EI students, preferred design with emotional strategies including colour, attractive and appealing font, and also images [5]. Besides, Chiu et al. [6], suggested that the emotional design "face-shape like and warm colours" had essential effects in developing

remembering. They also suggested that teachers should be mindful when designing activities for catching the interests and to trigger motivation. It is because those activities may not lead to a better outcome of learning [6].

Uzun and Yildirim [7] used an emWave emotion detecting device in order to measure the positive emotions. They explored the consequence of using various levels of emotional design features in learning multimedia science. Their discoveries revealed that positive emotions went up as the number of emotional design features topped up. However, the more mental effort was invested by the students who used the Colourful Design in comparison to the students who used the Neutral Design. On the other hand, students who used the Anthropomorphic Design and Sound Effects invested less mental effort in comparison to students who used the Colourful Design. Concerning their recall score, students who used the Colourful Design did better compared to the students who used the Neutral Design [7].

Zolkifly and Shahrel [8] supported the idea by Kotler and Armstrong [9], that consumer purchasing behaviour is the buying behaviour of the final customers who buy goods and services for personal consumption. Figure 1 shows the consumer purchasing behaviour model.
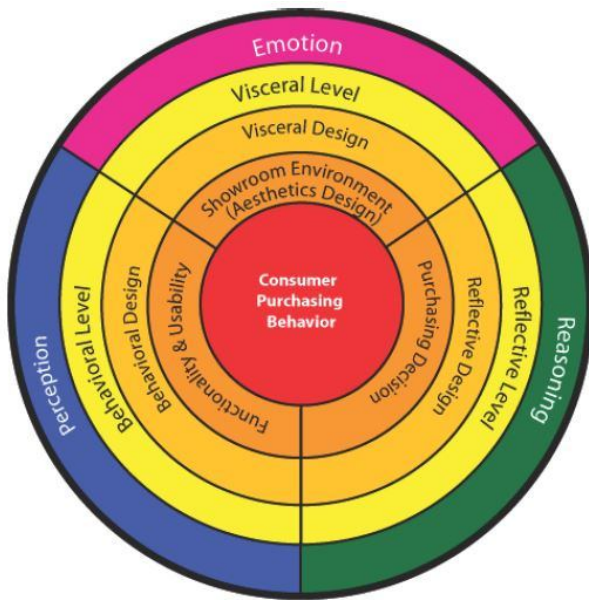


**Figure 1:** consumer purchasing behaviour

Emotional space can be created in e-commerce. Kukhta and Pelevin [10] emphasized that the ability to create emotional space is determined by the quality of shape, which generating particular psychological reactions in the form of emotions. Thus, the focus of this paper is to find ways of creating emotional space in e-commerce.

By concerning emotional design, Mayer and Estrella [11] explained motivation as the learner's cognitive state of where the goal-directed behaviour is initiated, energized, or even maintained. As mentioned by Park et al. [12], affective and cognitive influencing learning to be impacted by the learners' emotional state and emotional design of a learning program. Their research also proved that being in a state of positive mood before start learning enhanced the learning outcome. A greater learning outcome is to be achieved when the emotion is in a positive state before learning combined with the design of a learning environment. This also influenced the 'eye movement' of the learners. They then suggested that teachers and instructional designers provide learning environments that contribute to the increases in positive emotions [12]. This is supported by a few researchers [13][4][14], that the positive emotional design of the learning environment will contribute to better learning performance. If the elements appear to be visually appealing, the cognitive processes will be enhanced and thus lead to higher learning scores.

## 2. RELATED WORK

According to Park et al. [12], learners who are already in an emotionally positive state before starting to learn something will be able to learn more effectively compared to those who were not in that state. Prado-León [15] suggested that data about colour preferences need to be attained for specific products. This is for the purpose of satisfying the requirements of a pleasurable design. Positive emotions generally increased as the number of emotional design features increased [7].

Mayer and Estrella [4] and Heidig et al. [16] emphasized that the significant challenge in implementing the principles of emotional design in multimedia lessons is to tap the affective processes that prime cognitive processes bring about significant improvements in learning while making sure that the learner is not distracted from the important components of the lesson. They also mentioned the emotional design of multimedia instruction, including making the important components in the lesson's graphics more desiring and more appealing. One way to do it is to render the designs with human-like features, added with colours that are appealing and distinct.

Plass et al. [17] investigated how colour, shape, expression, and dimensionality of the game character is able to bring up the emotions induction in digital games for learning. Based

on their findings, there are relative contributions of all the mentioned attributes on players' perception of affective quality. To further explain, the attributes with the strongest effect are visual design features of expression and dimensionality, followed by colour, and lastly shape [18]. Caney and Levin [19] suggested that pictures bring about five distinctive functions. Four of the functions work in supporting learning directly. They are representation, organization, interpretation, and also transformation. Decoration as the fifth function is not related to the content of the learning text. Tien et al. [20] revealed that students who were studying by using multimedia materials with animation and colourful multidimensional concept maps presented higher learning well- being.

Azzalini et al. [21], mentioned that the heart and gastrointestinal (GI) tract intrinsically produce their own electrical activity and thus keep on sending information to the brain. They also suggested that these nonstop ascending signals keep on shaping the brain dynamics at rest, and thus complementing canonical resting-state networks (RNSs). The signals of the cardiac also affecting the process of the information comes from the external sensory and also the production of the cognition that is spontaneous and internally [21].

Zolkifly and Baharom [8] proposed a conceptual model in designing a car showroom where the conceptual model was effectively enhancing the purchasing behaviour of consumers from the design perspective. The study indicated the five specified dimensions that can explain the cognitive and emotional evaluation by users of information desks in libraries. *Modern* is a concept wider than simply considering the latest available equipment, as it comprises spatial arrangement and decor evaluations. *Welcoming* is about to go past basic demands of relief or cleanliness. It is also related to the positive sensations and emotions that the information desk can produce in users at first glance. *Professional* is a symbolic concept that aids in giving the library a desirable image. Lastly is *simple* and *accessible*. A product or arrangement has to properly and proficiently communicate to users the functions it performs and how they should be interacted with. These five specified dimensions positively influenced the willingness to interact with users. In descending order, they are modern, professional, welcoming, and accessible. The research found out that the factor simply did not influence the user's behaviour since most of the information desk in the sample they selected was simple and tidy the moment they were photographed [8]. Besides, Cortés-Villalba et al. [22] stated that there are some top influential concepts for people to use the library

information desk. In the descending sequence, they are modernity, professionalism, welcoming, and accessibility.

A study by Kumar et al. [5] revealed that no significant difference found between gender and CGPA when students were exposed to the emotionally designed multimedia learning environment. However, male students were quite motivated and satisfied with the Negative Design compared to the female students that mostly prefer Positive Design. Figure 2 shows the Positive, Neutral and Negative Design.



**Figure 2:** Screenshots of the Positive Design, Neutral Design and Negative Design

According to Kukhta and Pelevin [10], the form that is able to produce meanings that meets all the aesthetic and artistic requirements is the most meaning-capacious since the meaning and form are inseparably linked to the internal and external manifestation of reality. In addition, Zolkifly and Baharom [8] stated that emotion and perception could be designed and measured.

Mayer and Estrella [4] supported the idea by Mayer [11] on the cognitive theories of multimedia learning; meaningful learning happens when the learner is getting engaged with appropriate selecting, organizing, and integrating during learning. The outcomes of their research are in line with the predictions of the cognitive-affective theory of learning with media (CATLM), added with the extension of the cognitive theory of multimedia learning (CTML) [4]. The result provides clear insight suggesting that the students are quite motivated when the relevant graphics used in a lesson is made more attractive and appealing [23]. It shows that emotional design cues are making the learners be enhanced in terms of effort (ie. motivation) to make sense of the presented learning materials, which in fact leads up to better outcomes of learning, able to support performance the tests of comprehension.

Mayer and Estrella [4] suggested that it is a good decision to extend the cognitive theory of multimedia learning (CTML) and also cognitive load theory (CTL) to unite the idea that

emotional design can foster significant and generative processing during learning, and thus lead to better learning of the material. They also mentioned that a practical implication for applying the principle of emotional design is to identify the key elements in the lesson, come up with representations that personify the top significant components. For instance, with faces and facial expressions, and highlight all key components with distinguishing and happy colours rendered with simple shapes of human-like. It is benefitting to consider which types of test performance might be aided or hurt by emotional design [4].

Stark et al. [24] investigated an extension of the hypothesis of emotional design in multimedia learning for textual elements. Their study concludes that learners' emotional state only affected by the negative emotional text design. The findings supported the analysis of qualitative data received from the interview questions, showing that only participants in the group with the negative emotional design reported that the words with emotionally induced affected their emotional state during learning. Their study extends the results by showing the effect of an emotional design was also for a negative emotional design which, in fact, contributes to enhanced learning [24].

## 3. METHODOLOGY

In this research, we are trying to find out all the attributes of Emotional Design that will potentially contribute to the undisputed attractiveness of the design of an e-commerce website. The attributes will allow the creation of positive emotional space on the users. This emotional space will then bring up the pleasing emotion in a customer, affecting their purchasing behaviour, and thus potentially trigger the purchase. A lot of attributes that contribute to effective emotional design is applied to a system of e-commerce that will be created in this study. One of them is appealing shapes like a round. The colours applied have to be warm colours. Prado-León [15] conducted a research in colour preferences in household appliances. Their research used colour samples including nine chromatic (blue, yellow, brown, cyan, orange, purple, red, pink, and green) and three achromatic (white, black, and grey), which was applied to the household appliances. Their findings suggested that a greater preference was found for achromatic colours, especially white and black. Even grey surpassed the most preferred chromatic colour, which was blue. In respect to gender, the colour preferences for women are pink, while men are blue for five household appliances. They then emphasized the need to obtain data about the preferred colours for specific products to satisfy the requirements of the pleasurable design. Wijk et al. [25] brought up a study of colour preferences and

recognition among aging adults and came up with the order of colour preference to be blue, green, and red in the first place, while brown in the last place. This result coincides with the result that Prado-León [15] came up with.

Mohamed Kamil et al. [26] came up with a new perimeter of design thinking with their main focus on the emotional design and the direction for the development of pioneering product design. They mentioned about the Bargh and Morsella's Unconscious behavioural guidance systems in their paper (Figure 3).
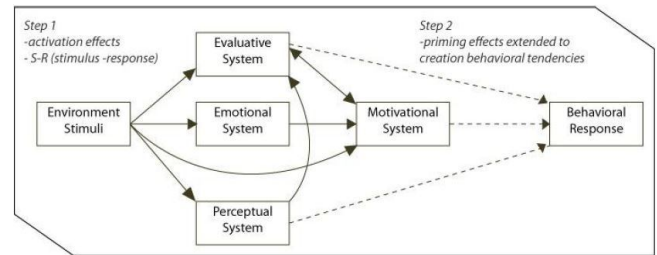


**Figure 3**: Bargh and Morsella's Unconscious Behavioural Guidance Systems

Figure 3 shows, "Step 1" (solid lines) is referring to the automatic activating of distinct internal processing systems while "Step 2" (dotted lines), on the other hand, is referring to the automatic influence of these activated systems on behaviour.

In further explanation, the environment first triggered the behavioural response. The process then continued by having the emotional, perceptual, evaluative, and motivational system affected before the behavioural response finally created. Designers are seeing this model as the great influencing factor in order to understand the process of user's behavioural before they try to identify other possible gaps.

According to Norman [27], the fundamental principle of the visceral level comes from the human instinct that is said to be harmonious between diverse people and cultures. At this level, the interaction is captivated by the sense of stimulation; hearing, seeing, touching, tasting, smelling, and so on. The moment a user receives the sense of stimulation and responds, he or she obtains the emotional interactions diversely. Norman [27] emphasized that the level of visceral is the opening, but it brings about the most direct and irresistible effects. Norman [27] explained that visceral level functioning as the one in charge of the ingrained, automatic, and almost animalistic qualities of human emotion, which are hardly under our control. The behavioural level refers to the aspects of human action that can be controlled. We unconsciously investigate a situation in order to develop goal-direct strategies most likely to be effective and efficient,

with the most fewer actions. On the other hand, the reflective level, as stated by Norman [27], is the reflection of home, of conscious thought, of learning new concepts and generalisation about the world. These levels are classified as dispersed dimensions of the system of the emotion, linked and affecting one another in order to create our overall
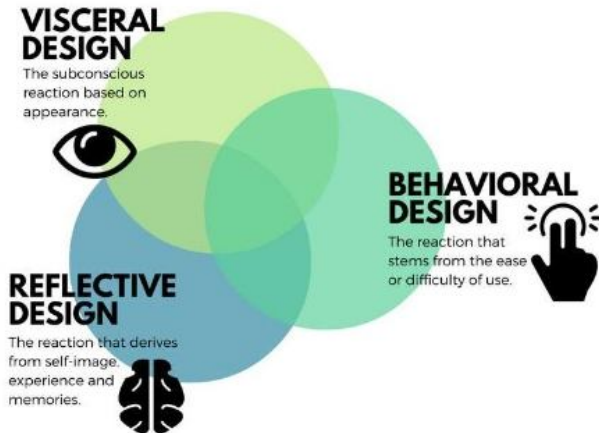


emotional experience of the world. By in line with the suggestion from Norman [27], we can focus on the three types of design. Figure 4 shows the three types of designs consists of Visceral, Behavioral and Reflective Design.

**Figure 4:** The Three Types of Designs

Visceral Design – Concerns itself with appearance. This refers to the perceptible qualities of a design and how they affect the users emotionally. In the development of a product, much of the time invested and dedicated to visceral design since many products within a particular group tend to provide the same or similar functionalities. This design helps in distinguishing a product from its competitors where it is not by the tangible benefits it provides to the user, but by tapping into users' attitude, beliefs, feelings, and how they want to feel, so as to provoke such emotional responses. This can be done by using proper colour, shapes, pictures, or even styles that evocative of a certain era. The visceral level aspects of online customers can be triggered. According to Zolkifly and Baharom [8], visceral level aspects can stimulate the immediate emotional response of customers on the Internet. Norman [27] mentioned that the visceral initiates reaction. Mayer and Estrella [4] emphasized that graphics have to be designed to be visually appealing and personified as long as the redesign focuses on the attention of the learners on the relevant, significant aspects of the graphic. On the other hand, Mayer [11] proved that adding visually appealing, but irrelevant graphics can distract the focus of the learners and lead to ineffective learning. So, we

can say here that the emotional design principle that is categorized as interesting and personified graphics enhance learning when they are relevant rather than irrelevant to the instructional goal.

Behavioural Design – Concerns with the pleasure and effectiveness of use. This design is mostly referred to as usability. It is taken into consideration how users carry out their tasks or activities, how effective or efficient they can reach their aims and objectives, how many mistakes the users made when carrying out certain tasks, and how good the products serve both skilled and inexpert users. It is the easiest part that can be designed since the usable parts of a product can be manipulated in some ways. Here, we can say that the level of behavioural refers more to the emotions users felt as a result of successful or failed in completing our goals or tasks. Norman [27] supports this statement by saying that behavioural level involves all the answers in the use of an object given by users of the objects. Thus, behavioural design is all about use. Zolkifly and Baharom [8] mentioned that designers should be aware of consumers' perception of functionality and usability. A study by Schneider et al. [13] shows that aesthetics and usability are able to affect the emotional states and positive states, leading to better learning performance and also higher intrinsic motivation. Park et al. [12] and Baharum et al. [28] used eye-tracking to observe induces emotions (positive vs neutral) while the design of the learning material was being manipulated (with vs. without anthropomorphisms). The students that had the induction of an optimistic emotional state had a better understanding and transfer scores and showed longer fixations on verbal information.

Reflective Design – Concerns with the rationalization or intellectualization of a product. Norman [27] emphasized that this is the highest level of emotional design. It represents the conscious thought layer. Here, the user consciously approaches a design, considering its pros and cons, judging it based on a more nuanced and rational side, and extracting the information to determine what it means to the user. In addition, reflective thinking enables us to rationalise the environmental information in influencing the behavioural level. The reflective level facilitates the effects of the behavioural level. According to Norman [27], the reflective design includes all thoughts that we may have in accordance with items is more complex. He added that it is about the message, culture, and the meaning of a product or its use.

Next, the usage of proper metaphor. According to Chung [29], metaphor is a design. It is where the experience is conceptualized and enables a designer to come up with a good metaphor. The usage of design that most people

familiar with also can be used instead of metaphor. For example, the usage of the proper icon on the e-commerce page. He stated that metaphor should not be seen as just a complete and static image. Instead, it is supposed to be a way to create a diverse connection so that they embellish their new design concepts and highlighting distinctive product properties. In his study, he inspected the theoretical background of metaphor so that designers can use it as a tool to enhance the effectiveness of their design outcomes [29]. However, its implementation must be based on cultural and social congruence with other. It is because the inappropriate and unfamiliar metaphor will be causing errors, anger, or even disappointment. The study on metaphor also aided in identifying desired attributes of a product that they design while improve and refined to visualize the attributes into certain form or function so that its users will receive a clear sense. Kukhta and Pelevin [10] suggested that the ability to create emotional space is influenced by the quality of shape, which generating specific psychological reaction in the form of emotions. The purpose of art-design is to enable us to design emotions and innovate vivid and symbolic images of high artistic value [10].

## 4. DISCUSSION

There are three levels of design as mentioned by Norman [27]. The very first impression of design always refers to the first level, which is the visceral level of design. The experience of the product in use is referring to the behavioural level. The last level is the reflective level. It refers to the user's reflections about a product, be it before, during, and after use. The combination of all three levels forms the whole product experience.

Prado-León [15] coincided that colour preferences have both practical and scientific relevance for designers and manufacturers. Concerning the practical aspect, the act of applying the colour preferences to products is commercially essential and has considerable economic consequences. Also, concerning the theoretical aspect, there is a long and deep interest in the nature and origin of colour preferences, in trying to determine whether such preferences are attained or innate, whether they are universal of different from society to society or from individual to individual.

Some other elements of the emotional design can be induced to an e-commerce website that is to be developed. One of them is the use of proper metaphors that potentially bring about good design concepts that distinguish a design compared to other existing designs.

## 5. CONCLUSION

Positive emotions generally increased as the amount of emotional design features increased. By properly inducing the emotional design, it allows for the creation of emotional space in e-commerce positively, thus bringing a positive impact on e-commerce. It is essential for designers to expand their parameters in design thinking. They can do this by having all the possible opportunities analysed whereby these opportunities exist significantly in unconscious human behaviour. The review from this study can be used as a guideline by many website developers in boosting the e-commerce that has quite a significant potential nowadays since a lot of purchases are made online. The proper design concept is proven to be essential in creating positive emotional space that will trigger the e-commerce. Further study should replicate this study in a smaller scope. For instance, the purchase of a specified product online, and how the induction of emotional design principles positively impacts the online purchase.

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