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RELATIONSHIP BETWEEN ONLINE SHOPPING SITES' DESIGN AND USER EXPERIENCE USING A SURVEY

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ABSTRACT

The functionality of a product's design should always be prioritized. A good design in a product will affect the experience of users and their emotions simultaneously. It is well-known that a good design will influence users with positive emotions (calmness, happiness, satisfaction), while a bad design will influence users with negative emotions (anxiousness, fear, unsatisfied). The emotions felt by users may also impact their decisions and thus, affect the shopping site's business at the same time. It has been said by many psychological scientists that emotions influence one's life decisions. Even in human-computer interaction, users' experience could trigger a human emotional response caused by certain factors which lead to their decision to use. Therefore, this research is conducted to examine how negative emotions may influence users' experience in another domain, online shopping sites and assess the possibility of a correlation between the online shopping sites' design and the human emotional response. An experimental research technique is used. A survey was conducted on 31 respondents to gain insight into the effectiveness of this research to evaluate the user's Key Performance Index (KPI) of their shopping process and improve the design of online shopping sites; after a thorough analysis of the completed survey results in negative emotions on users as they shop on online shopping sites. Two analytical techniques, Descriptive Statistics Analysis (Frequencies) and Pearson's r and Scatter Plots, were then used as metric measurements to analyze the user's feelings data obtained from the respondents. Three prominent feelings, such as engagement, boredom, and frustration, were selected as user's KPI data level for Descriptive Statistics Analysis (Frequencies). The other analytical technique is Pearson's r and Scatter Plots to evaluate the correlation strength between the six scales' feelings response toward the design. Results show that the existing online shopping sites have somehow mildly triggered the KPI index of boredom and frustration among the respondents involved. Even so, the KPI index of engagement is still on the positive side, and according to the six scales' feelings results, certain design components correlate with user's feelings and some are not correlated. Thus, to levitate the positive emotion is to consider giving more attention to the design component.

Keywords: *Negative Emotions, Online Shopping, User Experience, Interface Design, Emotion-based Experience*

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1. INTRODUCTION

According to Fokkinga and Desmet, it has been thoroughly proven that negative emotions contribute to pleasant experiences in domains like computer games and movies [1]. However, it has not been properly explored the effectiveness of negative emotions in other domains. In user's experience, the emotions felt by users play an important role as it will affect user's decision making. If users face difficulties and feel frustrated when using a product, the need to use the product in the near future will surely deplete. Natarajan, Balasubramaniam, and Kasilingam pointed out that experience is an important factor in identifying the individual differences and their behaviors in adopting the technology. However, there may have statistical differences in user experience between the long-term users and the new users; hence the ability to use it effectively may differ [2]. Supported by Lestari, Muslim and Moch, user experience can affect user's emotions when they use an online shopping site to purchase something. They added that a good user experience would present a positive experience and satisfaction that helps to sell online products [3].

Theopilus, Yogasara, Theresia, and Ardine explained that the exploration of online stores was encouraged by the interface features. The interface features make users linger and explore more; thus, customers spending time on online shopping sites is much longer than the offline stores [4]. Therefore, designing a web interface is a crucial matter and should not be done at the last minute. As stated by Yuan and Huh, a good design interface is not just about arranging the screen's composition or the way how the elements of hardware operate, but it includes all things the user experience with the products and making it easier for users to operate with the products in their daily life environment [5]. One can draw a hypothesis that the business of online shopping sites will increase when users have a pleasurable experience on shopping sites of high-quality design. Here, a question arises; what is the correlation between the business of the online shopping sites and the user's experience? The answer is simple: a good interface design influences good emotions in users. Thus, making user's experience a pleasant one when using the sites. Positive emotions will affect user's decision making and mood, making them feel eager and excited to shop on that particular online shopping site. So, once the shopping site with good design has gained user's interest, they will profit from it and gain a reputation too, economy-wise. However, Purwati claimed that many online shopping sites are not user-friendly and do not quite meet consumer expectations [6]. Thereof, the research design community established theories and methods on how to design for an enjoyable experience and how to trigger user's emotions from designs, which also shows the correlation between positive feelings and user's attitudes [7]. However, under different circumstances, the feelings could also become negative emotions. The complexity or difficulty perceived from the overall online shopping experience can cause consumer frustration [8].
Designers need to heed ways to prevent users from feeling negative when they use their products. However, this paper serves to investigate how these negative emotions can be identified to improve the design of online shopping sites and find out if there are ways to use those negative emotions as an advantage to improve the site's design. Throughout the evaluation of this paper, it was expected that there would be various ways recognized to help improve online shopping site's designs in the future. It is a vital effort to carry out a study on preventing negative emotions in users' emotions when using a product. More studies like this should be carried out on numerous domains. Kawaf and Tagg suggested focusing on individual experience by addressing the layout and navigation issues when deploying advanced visual technologies of an online shopping experience [9]. Therefore, this paper has chosen the topic to investigate the effectiveness of negative emotions in users' experience and how it can be used as an advantage for designers of online shopping sites. However, to gain the desired results from the survey, it is also important to have a structured procedure to prove it.

It is evident that a product's interface design is important in appealing to the user's interest. So, this paper identifies the major problems that exist in user's experience. According to MacDonald, although not all designs are perfect, some bad designs were created intentionally [10]. Therefore, the problems in interface designs need to be carefully studied. Next, the Key Performance Index (KPI) evaluation of users' experience from shopping sites needs to be conducted. It is hard to measure emotions, although bodily reactions can be measured reasonably. However, as there are variations of definitions for 'emotion', it is a challenge to put a metric to measure emotions. As mentioned by Kim et al., user engagement is not an uncomplicated thing to measure [11]. In this field of creating digital experiences, we as designers need to create engaging elements to earn value and excite the users.

Makkonen et al. suggested a further study on how the positive and negative emotions affect the repurchase and recommendation intentions of users during online shopping [12]. Thus, this paper provides an analytical survey on emotions and experiences that user's felt when surfing through online shopping sites. Mainly, there are three purposes of this paper which are; to identify the major barriers that users faced through a survey:

i. Evaluate the Key Performance Index (KPI) of users as a result of their shopping process through Likert scales in the survey, and,
ii. Recognising ways to improve the design of online shopping sites after a thorough analysis of the completed survey results.

In addition, this paper needs to identify the major problems that exist in user's experience. To do this, we need to determine if the interface's design problems are intentional or otherwise through a questionnaire in the survey. MacDonald mentioned that there are three levels where one can determine if a product has a bad design [10]. Although levels one and two can be recognized as aftereffects of a 'less-than-perfect' design, the outcomes still reduce user's experience. Here are the three levels mentioned before:

i. Mistakenly causing negative emotions as designers did not plan the design carefully or manage usability testing.
ii. An originally good design became unpleasant due to constant exposure.
iii. Design is intentionally made to make users feel unpleasant.

Next, the evaluation of the user's experience in the shopping sites needs to be conducted. However, as there are myriads of definitions for 'emotion', it is a challenge to put a metric to measure. Kemppainen, Makkonen, and Frank used a mixed metric approach to measure emotion. They used the metric scale from 1 to 7 with a subsequent open-ended section of the survey where the respondents were requested to elaborate on their emotions and explain their strong positive and negative feelings in words [13]. Thankfully, according to Kim et al., a Key Performance Indicator (KPI) scale is used to receive ratings from users regarding the emotions they felt when exploring the shopping site [11]. The KPI questions will be in the form of Likert scales as it will be easier to analyze the result. The Likert scales were formed to measure the level of agreement on a metric scale for the hypothetical situation under study [14]. Hence, a conclusion can be made on how pleasant the site's design is based on the KPI index. As a result, from both questionnaire and KPI evaluations, it became possible to figure out ways to refine the designs of online shopping sites. That way, we can help other interface designers create a better interfaces in the future.

However, the study of this paper is limited to the domain of online shopping site design, and the user experience involved is randomized not explicitly focused on gender attributes where such traits may result in different perspectives in research contributions. Nevertheless, this study appropriately describes the insertion of the KPI index and the Likert scale as metric approaches in the analytical procedures for measuring consumer emotions. At the end of this paper, the study provides findings on the design components that correlate with user emotions which can be used as primary design elements that characterize the emotional approach for web designers and developers.

2. RELATED WORKS

Triberti et al. stated that emotional design needs to be adopted in order for user experience to undergo any changes. It was stated that not only does the information in the product must be presented in a meaningful flow, but it also needs to fulfill user's myriads of needs according to their backgrounds. They also stated that there are several emotional parameters that designers in the user experience field need to take note of in order to cater to user's needs and improve user's experience [15], for example:

i. Humour and Enthusiasm – an application that can take away the stress in users are users sought-after.
ii. Engagement – an essential trait to gain user's interest so that they will visit or use the product frequently due to attention-gripping tools in the product.
iii. Communication – ensuring that users feel assurance when using the product.

Next is that Laugwitz, Held, and Schrepp stated that when using questionnaires to attain data, one way to get users' feedback effectively is by allowing the users to assess what they are most concerned about. It might be the feeling they get when interacting with the product or how was the experience like when users used the product? Constructing a questionnaire for users should contain simple questions that will straightforwardly convey the aim of the questionnaire to avoid confusion and miss analyzing data [16]. Cheng applies the Venn diagram under material and methods to study the usability and the efficiency of interaction design on online shopping

sites. The Venn diagram illustrates the intersection of the online shopping interface, interaction design, and user experience [17]. Therefore, the Venn diagram will be a good construction of cohesive questions in the questionnaire for this paper.

Turumugon and Baharum used 16 Kansei words in a 5 points Likert scale as a Kansei checklist where the participants were requested to rate their feelings from 1 to 5 from the scale values. They conducted a survey based on the checklist to identify the Kansei-based design and then explore the needs and emotions of users to convert the feelings of the users into the key design parameters [18]. Thus, the survey form should have questions that could help generate the key design parameters to cater for the research objectives. Lastly, Naim and Ibrahim pointed out that finding the user's reaction through their emotions can be done by measuring the response of the feelings in a production style and one of the analytical techniques that they use to measure the feelings is using the Descriptive Statistics Analysis (Frequencies) to accentuate the response of the emotions [19]. Furthermore, Naim and Ibrahim used Pearson's r and Scatter Plots to measure the possibility of a bonding relationship between the affective value and the cognitive value from the production style [20].
Hence, the same analytical technique with different circumstances could also be applied to this study to assess whether there is a possibility of a connection between human emotion and the product design, and this can be measured by using Pearson's r and Scatter Plots.

3. METHODOLOGY

An experimental research technique is used. Thus, a survey is to be conducted. The survey consists of questions regarding the user's experience using the online shopping sites and Likert scales to measure the Key Performance Indicator (KPI) of users' emotions throughout their experience. The questionnaires in the survey, as adapted by Schrepp, Hinderks, and Thomaschewski, consists of twenty-six items categorised into six scales [21]. The six scales are:

- Attractiveness – this scale will ask users for a general and comprehensive impression of the product. Does it appeal to user's attention and interest? *6 items: annoying / enjoyable, good / bad, unlikable / pleasing, unpleasant / pleasant, attractive / unattractive, friendly / unfriendly.*
- Perspicuity – users will be questioned whether the product is easy to get familiar with? Is it not complicated to learn and understand the product? *4 items: not understandable / understandable, easy to learn / difficult to learn, complicated / easy, clear / confusing.*
- Effectiveness – do users feel the interaction of the product is fast? Does the product give a competent impression to users? *4 items: fast / slow, inefficient / efficient, impractical / practical, organised / cluttered.*
- Reliability – does the interaction between users and product makes them feel in control and safe? Can users predict the system of the product? *4 items: unpredictable / predictable, obstructive / supportive, secure / insecure, meets expectation / below expectation.*
- Engagement – how users feel about the product? Is it exciting, fun and motivating for users to use? *4 items: valuable / inferior, boring / exciting, not interesting / interesting, motivation / demotivating.*
- Originality – is the product innovative, creative and can capture the attention of users? *4 items: creative / dull, inventive / conventional, usual / leading-edge, conservative / innovative.*

Next, the KPI measures user's level of engagement, boredom, and frustration. The KPI uses a Likert scale from one to five, with one being the most agree, three being neutral, and five being most not agree. Participants are users who are familiar with online shopping sites. The survey is conducted via Google form as it is easier to spread. Before the survey analysis is made, the gathered data should be prepared and checked for missing data and outliers to evaluate user's KPI. Referring to Figure 1, the 6 Scale's Feelings were used to identify the design components and measure the level of Attractiveness, Perspicuity, Effectiveness, Reliability, Engagement, and originality for the correlation study, whilst the KPI index measures the users' experience during online shopping from three perspectives, Engagement, Boredom and Frustration. From here, the design components can be derived from an emotion-based response.

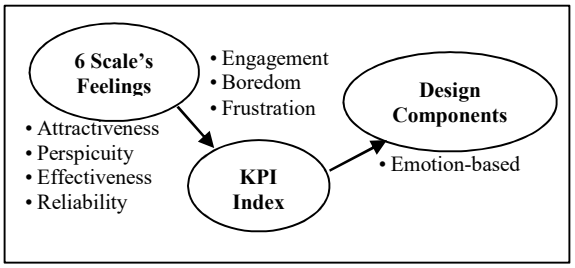

Figure 1: Conceptual Model for Emotion-based Experience

The Descriptive Statistics Analysis (Frequencies) is a statistical analysis that helps identify the most prominent feeling response based on the frequency level generated. This metric measures the user's KPI level of engagement, boredom, and frustration. The other metric is Pearson's r and Scatter Plots helps measure the correlation between the aforementioned six scales' feelings toward the design and assists in evaluating the correlation strength between the feelings variables. The Descriptive Statistics Analysis (Frequencies) is a statistical analysis that helps to identify the response of the most prominent feeling based on the frequency level generated. This metric measures the user's KPI level of engagement, boredom, and frustration. The other metric is Pearson's r and Scatter Plots helps measure the correlation between the aforementioned six scales' feelings toward the design and assists in evaluating the correlation strength between the feelings variables.

There were 31 respondents involved in responding to the questionnaire and two performance metrics were used to analyze the data obtained from the survey. Figure 2 depicts the flow diagram of the experimental research technique in obtaining and analyzing the data.

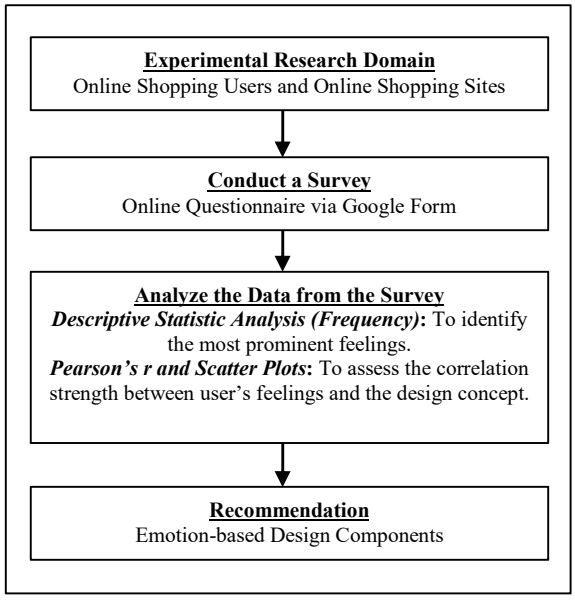

Figure 2: Experimental Research Technique Flow Diagram

4. RESULT AND ANALYSIS

These analyses were done to identify the major barriers that users faced, evaluate the Key Performance Index (KPI) of users as a result of their shopping process with the existing sites and help to recognize the importance of user feelings in user experience as a way to improve the design of online shopping sites. On the other hand, the six scales' feelings were used to collect general responses on how they felt about the design components..

1. Descriptive Statistics Analysis (Frequencies)

Table 1 shows the KPI of the user's level of engagement in frequency and percentage. Based on the results generated from Descriptive Statistics Analysis (Frequencies), 45.2% of respondents feel interested and engaged with the design, while the other 41.9% of respondents feel very much interested and positively engaged with the design of online shopping sites. In comparison to the percentage of feeling medium and feeling less, the percentage value is quite small, with each variable presented at 9.7% and 3.2%, respectively. Thus, the KPI of user's level for the level of engagement in statistical analysis indicated that the overall respondents indeed feel interested and engaged with the online shopping design.

Table 2 shows a contrasting outcome in KPI frequency and percentage of the user's level of boredom with the previous result. The result shows that 29% of respondents felt bored and not engaged with the design, while the other 25.8% of respondents opted for feeling mediocre. The percentage value for respondents who opted for less bored and less disengaged is seen quite small with only 19.4%, whilst the 12.9% percentage of respondents who feel positive is on the same value as the respondents who feel negative about the design. Thus, it is safe to conclude that in statistical analysis, the KPI of user's level for the level of boredom denoted that more respondents indeed felt bored and not engaged with the design of online shopping sites when compared to the respondents who were not bored.

Table 1: Level of Engagement: Users Feel Interested And Engaged With The Design Of An Online Shopping Site.

		Frequency	Percent
Valid	Less Very	1	3.2
	Medium	3	9.7
	Much	14	45.2
	Very Much	13	41.9
	Total	31	100.00

Table 2: Level of Boredom: Users Feel Bored And Not Engaged With The Design Of An Online Shopping Site.

		Frequency	Percent
Valid	Not Very	4	12.9
	Less Very	6	19.4
	Medium	8	25.8
	Much	9	29.0
	Very Much	4	12.9
	Total	31	100.00

Table 3 shows the outcome of KPI frequency and percentage of user's level of frustration. There are 29% of respondents feel frustrated and stressed with the design. The percentage value for respondents who opted for not very much angry and not very much stressed is seen quite small in number with only 12.9%. Whilst, the 19.4% of respondents who feel less not angry and less not stressed is on the same value as the respondents who feel mediocre. The respondents who feel angry and stressed about the design also have the same percentage value of 19.4%. Thus, it is safe to conclude that in statistical analysis, the KPI of user's level of frustration denoted that more respondents indeed feel angry and frustrated with the design of online shopping sites compared to the respondents who are not

Table 3: Level of Frustration: Users Feel Angry And Stressed With The Design Of An Online Shopping Site.

		Frequency	Percent
Valid	Not Very	4	12.9
	Less Very	6	19.4
	Medium	6	19.4
	Much	9	29.0
	Very Much	6	19.4
	Total	31	100.00

Table 4: Mean Value Statistics For The KPI Index.

	Level of Engagement	Level of Boredom	Level of Frustration
N Valid	31	31	31
N Missing	0	0	0
Mean	4.26	3.10	3.23

However, referring to the mean value in Table 4 for the aforementioned three levels, the mean value for the level of engagement that has the most impact on the condition statement is 4.26, while the other two levels are 3.10 and 3.23, respectively. Hence, the average feelings for engagement are positive, while the average feelings for a level of boredom and level of frustration are considered moderate. The Level of Engagement is related to users feeling interested and engaged with the design of an online site, the Level of Boredom is related to users feeling bored and not engaged with the design of an online shopping site, while the Level of Frustration is related to users feel angry and stressed with the design of an online shopping site.

Table 5 denotes the overall condition statements of mean values for the six scales' feelings toward the design of online shopping sites. The condition statement of mean values shows positive responses with all the mean values above 4.00. The outcome shows that respondents have positive feelings about the listed components of design for online shopping sites. Recognizing the user's feelings from these components could help identify the major barriers to user experience. Note that V in Table 5 is an acronym for a variable:

i. V1 = online shopping sites with attractive designs excites you to shop.
ii. V2 = Easy-to-understand design of online shopping sites makes you feel comfortable and want to shop more.
iii. V3 = Fast and efficient interaction between you and the online shopping sites lifts up your mood to shop.
iv. V4 = Based on the question before, the interaction makes you feel in control and can rely on the online shopping sites.
v. V5 = Exciting, fun, and motivating designs of online shopping sites encourages you to shop.

vi. V6 = Innovative and creative online shopping sites captures your attention and lift up your motivation to shop.

Table 5: Mean Value Statistics For Design Components

	V1	V2	V3	V4	V5	V6
N Valid	31	31	31	31	31	31
N Missing	0	0	0	0	0	0
Mean	4.23	4.48	4.55	4.42	4.19	4.23

2. Pearson's r and Scatter Plots

Table 6 depicts the correlation between the six scales' feelings. This analytical technique was conducted to verify the existence of interrelated feelings with the design components and the relevancy of having these components placed together when designing and developing an online shopping site. The outcome derived from Pearson's r could test the relationship between the components as variables and be aware of the major barriers faced by the users. Note that the *r* is Pearson correlation, *n* is the total of respondents and *p* is Sig. (2-tailed).

Referring to Table 6, the r-value = 0.297 and the p-value = 0.104 between the variable number 3 and the variable number 5 shows that there is no statistically significant correlation between the two variables; thus can be concluded that the "Fast and efficient interaction between you and the online shopping sites lifts up your mood to shop" and the "Exciting, fun, and motivating designs of online shopping sites encourage you to shop" are not related to each other. The variable number 3 also has no statistically significant correlation with the variable number 6 since the r-value = 0.352 and the p-value = 0.052, thus indicating that the "Fast and efficient interaction between you and the online shopping sites lifts up your mood to shop" also does not correlate with the "Innovative and creative online shopping sites captures your attention and lift up your motivation to shop"..

Table 6: The Six Scales' Feelings Correlations

		V1	V2	V3
V1	PC Sig. N	1 31	.672** 0.000 31	.465** 0.008 31
V2	PC Sig. N	.672** 0.000 31	1	.540** 0.002 31
V3	PC Sig. N	.465** 0.008 31	.540** 0.002 31	1
V4	PC Sig. N	.733** 0.000 31	.719** 0.000 31	.656** 0.000 31
V5	PC Sig. N	.821** 0.000 31	.645** 0.000 31	.297 0.104 31
V6	PC Sig. N	.714** 0.000 31	.700** 0.000 31	.352 0.052 31
		V4	V5	V6
V1	PC Sig. N	.733** 0.000 31	.821** 0.000 31	.714** 0.000 31
V2	PC Sig. N	.719** 0.000 31	.645** 0.000 31	.700** 0.000 31
V3	PC Sig. N	.656** 0.000 31	.297 0.104 31	.352 0.052 31
V4	PC Sig. N	1	.527** 0.002 31	.475** 0.007 31
V5	PC Sig. N	.527** 0.002 31	1	.889** 0.000 31
V6	PC Sig. N	.475** 0.007 31	.889** 0.002 31	1

PC = Pearson Correlation, Sig. = Sig. (2 tailed)

Although the other correlations values show a good relationship, there are statistically significant correlations that are positively quite strong on variable 5 with the other two variables. For instance, the correlation coefficient computed between the variable 5 and variable 1 is r-value = 0.821 and p-value = 0.000 and the correlation between variable 5 and variable 6 is r-value = 0.889 and p-value = 0.000. The scatter plot in Figure 3 depicted a positive correlation between variable 5 and variable 1. Figure 4 also shows a positive correlation between variable 5 and variable 6.

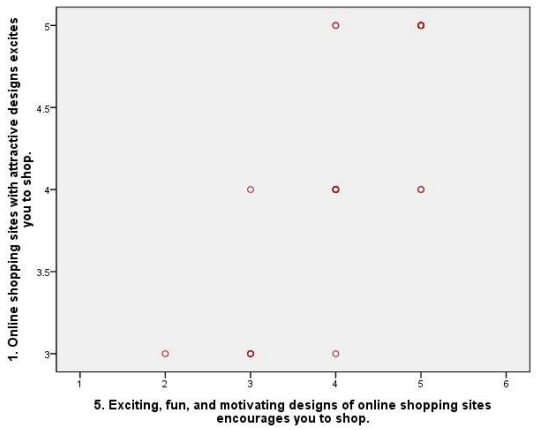

Figure 3: Scatter Plots Between Variable 1 And Variable 5.

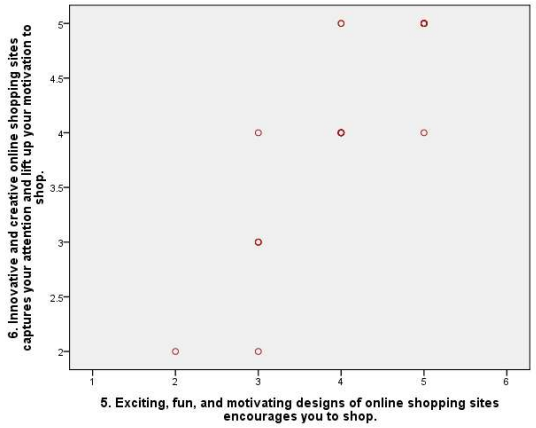

Figure 4: Scatter Plots Between Variable 6 And Variable 5.

Hence, it is safe to conclude that the exciting, fun and interesting design of online shopping sites has a strong positive correlation with the attractive, innovative, and creative design concept and should be taken into consideration to avoid possible negative emotions in user experience.

5. RESEARCH OUTCOMES AND CONTRIBUTIONS

The results derived from Descriptive Statistics Analysis (Frequencies) presented the frequency of feelings opted by the respondents from user experience when using the online shopping sites. In statistics, it is safe to claim that the KPI level of engagement toward the design components of current online shopping sites is positively prominent and the mean value, as shown in Table 4 supports the assertion. Nonetheless, the respondents involved are indeed familiar with the online shopping sites and have been using the sites occasionally or frequently; hence the level of engagement may not be the same with the ones who are unfamiliar with the sites. Furthermore, the KPI index for evaluation is not limited to engagement, bored, and frustration only. The KPI index will grow or revise depending on the variation in user experience perception or following the new idea that gives users a new experience in User Experience. Apart from that, the 6 scales' feelings correlation with design components suggested in this study is just an abstract idea that is worth taking note of in online shopping sites. Although the right components that can be described as attractive, innovative and creative which can influence motivation have not yet been studied in detail, the topic can be further investigated.

Furthermore, following the work process as per described in the conceptual model for emotion-based experience and the flow diagram of the experimental research technique, the statistics results generated from Descriptive Statistics Analysis (Frequencies) proved that the design criteria given the right circumstances as per discussed in the literature review are substantiated. The same can be applied to the results of having positive correlations between attractive, innovative, and creative design components to the feeling motivation as variables. The findings are similar to the prior discussion in the literature review that is related to the theories and methods on how to instigate user's feelings, how to design fun experiences and the correlation between positive feelings and user attitudes. Table 7 shows the overview of the comparison between the literature review and research findings:

Table 7: Overview of Comparison Between Literature Review and Research Findings.

	Literature Review	Research Findings
Negative emotions contribute to pleasant experiences in domains like computer games and movies.	√	x
Statistical differences in user experience between the long-term users and the new users hence the ability to use it effectively may differ.	√	x
The interface features make users linger and explore more.	√	√
Good user experience will present a positive experience and satisfaction.	√	√

Correlation between positive feelings and user's attitudes	√	√
The complexity or difficulty perceived from the overall online shopping experience can cause consumer frustration.	√	√
Mixed metric approach to measure emotion the metric scale with a subsequent open-ended section.	√	x
Evaluate the Key Performance Index (KPI) through Likert scales in the survey.	x	√
Conceptual Model for Emotion-based Experience.	x	√
Emotion-based Design Components.	x	√

6. CONCLUSION

To summarize, the existing online shopping sites have somehow mildly triggered the KPI index of boredom and frustration among the respondents involved. Even so, the KPI index of engagement is still on the positive side. Therefore, one way to levitate the positive emotion is to start to consider giving more attention to the design component that has a strong correlation with the other components compared to the ones that are not. When one component increases the mood, it will affect the other correlated components to increase the mood too; hence the novelty of this study is:

i. Developing the conceptual model for emotion-based experience as part of the underlying framework for UX. This model can be used before drafting the interface design for online shopping sites and,
ii. Producing the right domains that have the correlation strength between them and considering these aspects in the designing phase.

These findings are significant for web design and development for online shopping sites; however, the challenges are the experiment was conducted on random users without taking note of their gender preferences; hence these design components do not dive deeper into gender perspectives. Besides, the study, for now, is limited to finding the correlation between the design components and emotions only, whereas the research scope can be further explored for future studies.

Referring back to the initial hypothesis, the business of online shopping sites will increase when users have a pleasurable experience on shopping sites of high-quality design. This hypothesis is true based on the statistical results revealed in the study. The Pearson's r and Scatter Plots show positive correlations for two pair design components. The first pair variable is "online shopping sites with attractive designs excite you to shop" with "exciting, fun, and motivating designs of online shopping sites encourage you to shop". The second pair variable is "innovative and creative online shopping sites capture your attention and lift up your motivation to shop" with "exciting, fun, and motivating designs of online shopping sites encourage you to shop". The best example of a situation that can be described through these findings is web designers and developers can focus on the components like "attractive designs" and "exciting, fun, and motivating designs" since they are correlated with each other. The same goes with components like "innovative and creative online shopping sites" where this component could also affect the "exciting, fun, and motivating designs" and encourage users to shop on the online shopping site.

Returning back to the initial question, what is the correlation between the business of the online shopping sites and the user's experience? Again the answer is simple: a good interface design influences good emotions in users. However, identifying the design components that have no correlation strength between them is also important. For instance, the component like "fast and efficient interaction" does not correlate with the "exciting, fun, and motivating designs" and with the "innovative and creative design". Technically, the respondents are looking at the "fast and efficient interaction" function alone and so the web developers and designers should ensure and focus more on its smooth functionality rather than focusing on the "exciting, fun, and motivating design" or "innovative and creative design" part on the interaction feature. For that reason, unnecessary work on certain design components could be avoided.

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