

Perceptual Judgement of Smartphone Visual Aesthetics among Students of Moshood Abiola Polytechnic, Abeokuta, Ogun State, Nigeria

IBIWOYE, Tope Israel (PhD) and ADESIJI, Oladunni Philip
Department of Industrial Design, Federal University of Technology
Akure, Ondo State, Nigeria

Abstract

Visual aesthetics had always referred to the beauty or pleasant appearance of a thing. It is an offshoot of graphic design that does not only offer satisfaction to the beholder or user; it also might further affect the action of the user or beholder. The advent of mobile phone and the internet has drawn many users of smartphone in carrying out various tasks. The development in the smartphone design and visual features on the phones coupled with the unique opportunities provided by different operating systems cannot be overemphasised. Students, especially in the higher institutions are now found to glue to their smartphones for various purposes including academics. Being a visual gadget that has some visual properties in its operation, it has also caught the interest of visual research to probe into the attractive tendencies of the Graphical User Interface and design layout of the smartphone. The study therefore hinged on two research questions. The first addressed the perception judgement of the visual aesthetic features of smartphones among the students Moshood Abiola Polytechnic, Abeokuta, Ogun State, Nigeria, while the second research question focused on demographic differences in visual aesthetic judgement among students in the same study domain using the same sample in a survey study. Sample size of 380 was taken as sample from of 27,000 students. Systematic random sampling was used, which means that only those who possess android smartphones are qualified for the study, however, only three hundred and fifty-four (354) were used for the study being the number of returned questionnaire representing 92.2% of the total. Likert Scale was used to rate users' perception of the visual aesthetics of their smartphones and the result was analysed using descriptive statistics. This creates an inference that smartphone visual aesthetics presents an inspirational platform for its desired and continued use among students of higher institutions. Students' high satisfaction rate with the visual aesthetics of their smartphone had mean scores of 3.64 – 4.95 under Agree and Strongly Agree responses. The result also showed greater percentages of the demographic variables showing significant relationship with visual aesthetics perception among the respondents; while twelve (12) cases show large effect, only six (6) cases show exceptions with no significant effect relationship.

Keywords: Perceptual Judgement, Smartphone, Visual Aesthetics, Demography

Introduction

Smartphone provides interactive features for increasing wider users around the world. It has become an integral part of everyday student's life. Dan (2011) projected that mobile phone sales are expected to outstrip PC sales and the smartphone users worldwide will triple from 165 million to over 500 million within the few years. Developments of the mobile phones popularly called smartphones allow users to perform activities such as sending text messages, calling, chatting, opening documents, checking e-mails, browsing internet and downloading files in a very convenient way. Smartphone technology provides immense benefits for users as they access and disseminate information rapidly (Jollie and Liezel, 2016).

Resultant effects of the innovative achievements in smartphone technology has changed the face of formal teaching and learning processes, while it has simplified sourcing for information, its storage, retrieval, and many others. It has also exposed the users to distraction. Scholars who studied different areas of Information and Communication Technology (ICT) have suggested that the heavy use of technology for recreational purposes is highly correlated with reduced academic performance (Kubey, Lavin, & Barrows, 2001). Visual appeal may be a major bait of distraction in prominent usage of smartphone in satisfying affective needs at the expense of learning particularly among the youth.

Aesthetics is the area of artistic design that seeks to communicate primarily through the eyes, mind, brain and thoughts of the consumers of products. Visual Aesthetic- This refers to the beauty or the pleasing appearance of things. In studying aesthetics in the human-computer interaction, smartphone takes a prominent role in the present discourse among the youths with respect to academic pursuit in the mind of all stakeholders in the educational and industrial design fields.

Smartphone visual aesthetics considered as the features involving its layout, navigation, graphical user interface (GUI) elements (such as windows i.e. app workspace; buttons, menus and etcetera, with which users interact through the use of one or several modalities such as mouse, keyboard, touchscreen, voice recognition system etc.) and interactivity of the screen. The study therefore aimed at investigating how students perceive the visual aesthetics of their smartphones; the study further probed into the effect of demography on student visual aesthetic judgement.

Research Questions

The study therefore hinged on the following research questioned for explicit delineation.

1. What is the perceptual judgement of smartphone visual aesthetics among students of Moshood Abiola Polytechnic, Abeokuta?
2. Is there any demographic differences in visual aesthetic judgement among undergraduate students?

Literature Review

Smartphone Visual Aesthetics

It is obvious that the design of a product should reflect the desired image of the product. Solid, fast, youth attractive, high quality, feminine, masculine; all these attributes can be reflected and enhanced through innovative design. Yigit and Halil (2015) submit that, one of the most effective ways of differentiating products amidst competitors is using aesthetics. Visual aesthetics of products creates value for consumers. Visual aesthetics create significant value for product and makes it more special. In the opinion of Sabnam (2016), among all five senses, visual aspects is very essential for marketers in every marketing form, may it be store or package designing, or advertising. Visual elements can be interpreted into various messages. Colour is the best example of visual aspects which can interpret and convey several meanings and emotions. Colour speeds search times and are basically used to attract consumers. The extracted parameters as adopted from Mathieu and Jean (2014) are:

- Screen resolution
- Learnability - easy to understand
- Emotional effects
- Configuration options and shortcuts
- Navigation and user control
- Visibility and system status
- Layout of smartphone interface

These seven parameters were used to generate a 10-item instrument to measure users' perceptual judgement of their smartphone visual aesthetics.

Role of Visual Aesthetics in Human-Computer Interaction

The importance of visual aesthetics to the field of Human Computer Interaction, HCI can be discussed from various perspectives among which are design perspective, the psychological perspective, and the practical perspective (Tractinsky and Hassenzahl 2005). The design perspective is first, the implication to recognise that aesthetics constitutes an important and integral part of any design discipline. The importance of aesthetics increases as the interface between the artifact and the affected people (e.g., in terms of visual saliency, length of interaction or co-habitation) becomes more comprehensive. The second implication is that visual aesthetics is often related to other design aspects. Thus, not only should we not worry about trading off aesthetic and other qualities of interactive systems; we should embrace aesthetics as a dimension that augments other aspects of the design and the overall interactive experience.

The psychological perspective the emergence of visual aesthetic research in HCI, it had its roots in the “positive psychology” movement (Seligman and Csikszentmihalyi, 2000) that called for a shift towards dealing with human strengths and well-being instead of with weaknesses and their remedies. This sentiment was enthusiastically embraced in the field of HCI in the context of studying the user experience (Hassenzahl and Tractinsky, 2006; Law and Schaik, 2010).

Differences in Aesthetic Judgement based on Demographics

In a study based on info-graphics, Lane, Katharina and Remco(2015) found that demographic factors such as gender, age, and education level impact perceived appeal; the study reported ‘colourfulness’ and visual complexity explain roughly half of the variance in people’s judgements of the appeal of websites and are considered some of the most salient features that humans perceive within the first 500ms with varying ratings across the demographic variables. Findings from Lane *et al* indicates that females prefer more colourful, yet less complex info-graphics than males, while males generally prefer fewer and less saturated colours and are relatively unaffected by different levels of complexity. Preference for simple info-graphics slightly increases with age and education level. Thus, the general preference for colourful info-graphics with few text and image areas might appeal to most participants in our sample, but not to all.

On gender-based variation, Moss (2003) took a swipe at physiological factors, the study submits thus. Men's preference for three dimensional vision may be related to the fact that men's eyes are 4 centimetres further apart than women's, as well as to the fact that the part of

the brain used for three-dimensional vision, the inferior parietal lobe, is larger in men than in women. Women's instinct for colour on the other hand, may be related to the lower incidence of colour blindness amongst females than males. On average, 8% of males suffer from colour blindness as compared with 0.5% of females. Some might see these attributes as the outcome of an evolutionary process which placed a premium in women on the development of close-up skills, skills not requiring superior 3-dimensional vision (skills such as food gathering, child rearing and the construction of the domestic foyer and its contents); while men's superior 3-dimensional skills and preference for dark colours could be seen as an adaptation to the need to stalk and hunt prey at a distance (note that colours look dark on the horizon). In similar vein, Shih-Yung and Hsiu-Tyan(2014) in a study evaluating aesthetic response of architectural space, it is asserted that gender, grade and major do have certain effects on aesthetic evaluation; moreover, it also verified that professional training brought significant differences to aesthetic evaluation.

Methodology

Descriptive research of survey type, which involves analyses, interpretations, comparisons, identification of trends and relationships (Neeru, 2012), was adopted for this study. As a survey research, structured questionnaire was used as inventory tool to obtain data from the sample audience. The questionnaire was in two parts. The first part addresses the demographic characteristics of the respondents while the second part addresses the views of the respondents on the issues raised in the set objectives. The questionnaire was constructed based on the Uses and Gratifications Theory; it measures users' satisfaction according to their self-reported judgement of satisfaction.

The students of Moshood Abiola Polytechnic, Abeokuta, numbering 27,000 is population for this study, purposive sampling was adopted in the sample selections; this means that those qualified to participate in this research need to own a smartphone, therefore, the questionnaire was given to students who owns a smartphone and the sample size was determined with the use of The Cochran equation (Cochran, 1963):

$$n = \frac{n_0}{1 + \frac{(n_0-1)}{N}}$$
$$n = \frac{385}{1 + \frac{(385-1)}{30000}} = \frac{385}{1.014} = 379.7$$

= 380

Results and Findings

Demographic Data of Respondents

Table 1: Respondents' Demographic Information

	Response	Frequency (%)
Age	Less than 20	54 (15.3%)
	20 – 25 years	195 (55.0%)
	26 – 30 years	105 (%)
	30 years and above	0 (0%)
	Total	354 (100%)
Gender	Male	165 (46.6%)
	Female	189 (53.4%)
	Total	354
	Marital Status	Single
Married		18 (5.1)
Separated		0 (0%)
Divorced		0 (0%)
Widowed		0 (0%)
Total		354
Academic level		ND
	HND	165 (46.6%)
	Total	354

(Source: Researchers, 2017)

A total of three hundred and eighty (380) questionnaires were distributed to the respondents out of which three hundred and fifty-four (354) were returned, representing 92.2% of the total. The demographic variables included in the questionnaire are name (optional), age

range, gender, marital status, academic level in school, and course of study. Other parameters in the general statistics are the brand of respondent's smartphone and the operating system installed on it. Table 1 gives a breakdown of the demography as follow: The response statistics shows 15.3% representing a total of 54 students who participated in the study are less than 20 years, 195 students out of the total 354 (55%) were aged between 20-25 years, while 105 students (29.7%) are between 26-30 years old, and no participant is above 30 years. The total population of male respondents are 46.6%, 165 students while the female - students were represented with 189 students which translates to 53.4%.The marital status of the respondents show that a whopping 336 students (94.9%) are single while only 18 (5.1) of the total number are married, data obtained shows that there is no respondent who is separated, divorced or widowed.The participating students in ND classes are 189 students (53.4%) while 165 students (46.6%) who are in HND classes in the institution as contained in.

Table 2: Perceptual Rating of the Smartphone Visual Aesthetics

		SD	D	U	A	SA	Mean	Rank
		Freq	Freq	Freq	Freq	Freq		
		(%)	(%)	(%)	(%)	(%)		
1.	The screen resolution of my smartphone is excellent.	12 (2.5)	24 (6.8)	21 (5.9)	177 (50)	123 (34.7)	4.08	6
2.	My smartphone features are easy to understand	03 (0.8)	12 (3.4)	18 (5.1)	183 (51.7)	138 (39)	4.25	2
3.	I am always excited to do one thing or the other on my smartphone because of its attractive features.	06 (1.7)	09 (2.5)	18 (5.1)	165 (46.6)	156 (44)	4.95	1
4.	My smartphone allows configuration options and shortcuts.	15 (4.2)	12 (3.4)	09 (2.5)	201 (56.8)	117 (33.1)	4.11	4
5.	My smartphone enhance fast navigation and adequate user control.	06 (1.7)	18 (5.1)	09 (2.5)	204 (57.6)	117 (33.1)	4.15	3

6.	My smartphone allows quick visibility and system status.	12 (3.4)	09 (2.5)	15 (4.2)	213 (60.2)	105 (28.7)	4.10	5
7.	The layout of my smartphone interface is pleasantly varied.	09 (2.5)	21 (5.9)	30 (8.5)	210 (59.3)	84 (23.7)	3.96	7
8.	The aesthetic features of my phone influenced my choice at point of purchase	21 (5.9)	39 (11)	39 (11)	162 (45.8)	93 (26.3)	3.75	9
9.	I am always inspired to use my smartphone frequently because it is visually appealing.	09 (2.5)	27 (7.6)	36 (10.2)	177 (50)	102 (28.8)	3.96	7
10.	The aesthetic features of my smartphone suit my cognitive and affective needs.	24 (6.8)	48 (13.6)	36 (10.2)	168 (47.5)	78 (22)	3.64	10

Key: Strongly disagree – **SD**, Disagree – **D**, Undecided – **U**, Agree – **A**, Strongly agree– **SA**
(Source: Researchers, 2017)

Table 2 shows the students' high satisfaction rate with the visual aesthetics of their smartphone has mean scores of 3.64 – 4.95 under Agree and Strongly Agree responses were expressed in six (6) out of the ten (10) visual aesthetics questions. The Table also shows that layout, navigation and user control aspect has the highest mean score (Agree and Strongly Agree) overall in the aesthetic judgements for:

1st- I am always excited to do one thing or the other on my smartphone because of its attractive features.

2nd - My smartphone features are easy to understand

3rd - My smartphone enhance fast navigation and adequate user control.

This creates an inference that smartphone visual aesthetics presents an inspirational platform for its desired and continued use among students of higher institutions; this agrees with the finding of Malik and Muhammad (2018) that visual aesthetics is an effective determinant in the adoption of mobile banking service.

Table 3. Demographic differences in visual aesthetic judgement among undergraduate students

	Age	Gender	Marital Status	Academic Level	Course of Study
1. The screen resolution of my smartphone is excellent. <i>Cramer's V = 0.32</i>		0.16	0.20	0.35	0.26
2. My smartphone features are easy to understand <i>Cramer's V = 0.18</i>		0.30	0.20	0.28	0.187
3. I am always excited to do one thing or the other on my smartphone because of its attractive features. <i>Cramer's V = 0.23</i>		0.32	0.33	0.41	0.27
4. My smartphone allows configuration options and shortcuts. <i>Cramer's V = 0.18</i>		0.18	0.20	0.30	0.29
5. My smartphone enhance fast navigation and adequate user control. <i>Cramer's V = 0.22</i>		0.21	0.10	0.19	0.19
6. My smartphone allows quick visibility and system status. <i>Cramer's V = 0.21</i>		0.19	0.19	0.37	0.23
7. The layout of my smartphone interface is pleasantly varied. <i>Cramer's V = 0.17</i>		0.34	0.16	0.18	0.28
8. The aesthetic features of my phone influenced my choice at point of purchase <i>Cramer's V = 0.23</i>		0.10	0.16	0.20	0.31
9. I am always inspired to use my smartphone frequently because it is visually appealing. <i>Cramer's V = 0.20</i>		0.14	0.11	0.21	0.44
10 The aesthetic features of my smartphone suit my cognitive and affective needs. <i>Cramer's V = 0.18</i>		0.20	0.11	0.22	0.31

(Source: Researchers, 2017)

A chi-square test for independence (with Yates Continuity Correction) indicated significant association between the listed demographic variables; age, gender, marital status, academic level and course of study. Based on Cohen (1988) criteria for determining the effect level of Pearson chi-square value:

0.1 - Small effect, 0.3 –Medium effect, 0.5 – Large effect

Greater percentages of the demographic variables show significant relationship with visual aesthetics perception among the respondents; while twelve (12) cases show large effect, only six (6) cases show exceptions with no significant effect relationship

From the foregoing, there is significant difference in visual aesthetic judgement based on demographics of undergraduate students, however, “My smartphone enhance fast navigation and adequate user control” which measures navigation and user control parameter returns no significant difference among the demographic variables; this implies that all the participants in the study desires clear-cut ease in usage of their smartphones irrespective of their status.

Conclusion and Recommendations

Excellent visual aesthetic quality of smartphones encourages its growing use and desirable incorporation of it into the daily tasks of undergraduates, therefore, care-givers, stakeholders in the education system need to fashion out ways to inculcate greater use of smartphones towards achieving academic and other life-centred goals by the students; this demands incorporating it in the learning system.

Out of the five (5) demographic factors tested academic level has the most difference in perception of visual aesthetics while marital status has the least effect; while every other parametric measure returns some level of demographic variations, there is significantly no difference in the respondents’ desire for fast navigation of their smartphones and user control. This work has contributed to the body of knowledge in the area of delving into the demographic aspects of the visual aesthetics perception in the human-computer interaction field, validates parametric factors for measuring visual aesthetics as well as provide empirical results in smartphone’s growing use.

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