Global Journal of Arts, Humanities and Social Sciences
Vol.7, No. 2, pp.38-51, February 2019
Published by European Centre for Research Training and Development UK (www.eajournals.org)

USE OF SMARTPHONES IN MOSHOOD ABIOLA POLYTECHNIC, ABEOKUTA, NIGERIA AND THE GRATIFICATION CONCEPT: A FACTOR ANALYTIC REPORT

Femi Kayode, PhD and ADESIJI, O. P.
Department of Industrial Design
Federal University of Technology
PMB 704, Akure, Ondo State, Nigeria

ABSTRACT: *Consumers are emotionally attached to products that make life easy. The economics aphorism that says 'human being are rational; they tend to derive maximum enjoyment from their last penny' seems to have taken its course in the consumption habit of an average human being. Observably, most products now come with value addition or multiple functions that gratifies the user. The Android smartphone is one. Being a consumer-nation, the Western world is busy flooding the Nigerian market with all manner of products without reference to whether or not the people have mastered the previous technology enough. However, recent studies have shown that smartphone products have both the good and bad sides of it. This survey study investigates the use of smartphones among the students of Moshood Abiola Polytechnic, Abeokuta, Ogun State, Nigeria and the gratification that they get from it. One objective and one research question were set to guide the 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. Questionnaire was used as research instrument while data collected were analyzed with the aid of factor analysis. Findings, after the factorial grouping and extraction shows that students are most gratified in the area of social interaction with a percentage variance of 27.174 than any of the other three factors.*

KEYWORDS: Smartphone, Multitasking, Gratification, Social interaction, Distraction.

INTRODUCTION

Products do not only differentiate themselves from other products in functionality, but also in the way that they please users (Jordan, 2000). It is difficult to keep up with the pace at which the western technologies are conquering the Nigerian markets. The westerners are busy flooding the Nigerian markets with their technologies in a hasty manner, even when consumers have not mastered the previous technology. They know that consumers are whimsically addicted to products and tasks that easily give access to rapid results. Little wonder, users, by nature expect a product to function properly (Roozenburg & Eekels, 1995), to be easy to use, and to touch them emotionally in some way (Desmet, 2002). The moment that products satisfy the consumer on iaspects like utility, safety, and comfort; the emphasis of the consumer will shift towards appearance, emotional attributes, and symbols (Crilly, Moultrie, & Clarkson, 2008). The economics maxim that says *human beings are rational; they tend to derive maximum enjoyment from their penny* holds true and cannot be easily undermined in consumerism. Consumerism is all

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

about the protection of the interest of product consumers. More to that, the propensity to spend less and get maximum enjoyment from every product is observed to be characteristically inherent in an average consumer. Products which carry uncommon values or added advantage over others are often well sought after. Therefore, option for products which have extra functions apart from the conventional function have taken more and more momentum among end-users. In Gangi and D'Ángelo (2016) it is noted that manufacturing companies are well informed of this knack in their customers and have started increasing their attention toward socially responsible behaviours of designs. This is in order to catch additional opportunity for improving the interaction of products with the consumers. Manufacturers that develop products in realization of this reality have grown significantly, especially in the consumer market. They have started to realize that they need ways to get into the hearts and minds of their customers to stay in business (Sanders, 2001). Android smartphones are no exception.

Far beyond the performance of the common button phones, smartphones could serve better functions other than interactive communication between users. Being a new generation of mobile phones (Kibona and Mgaya, 2015), smartphones provide interactive features for an increasing number of users around the world. It has become an integral part of students' life. In Kloser, Brownell, Chiarello & Fulami, (2011); American Association of the Advancement of Science, (2009) and National Research Council, (2003), it is stated that, it is critical to get students in classes to access, interpret and share data about the subject of study. Dan Frommer projected that mobile phone sales are expected to outstrip personal computers (PC) sales and that; the smartphone users worldwide will triple from 165 million to over 500 million within the few years. Besides, android smartphones outstandingly serve other composite functions like calculation of figures, date and time checking, as well as taking selfie photographs which has become a vogue among the users of android phones. The astonishing rate, and cost notwithstanding, students are found in possession of sophisticated smartphones because of these functions. The applications (apps) and functions that come with them, are not installed in the operating system for education and communication purposes alone, they are competitively installed to give maximum pleasure to the user. Although it requires constantly changing experiential knowhow to operate, other accessorial features and apps, are digitally engaging and could be frustrating. For instance, both the multimedia and the social media platforms have on them unique apps such as sound attachment, video and games, camera, notebook, facebook that can be navigated, others are WhatsApp and many other utilities that are too numerous to mention which require mental intelligence to learn and master. Design and production of android smartphones allow users to perform conventional activities such as sending text messages, calling, and chatting, opening documents, checking e-mails, browsing the internet and downloading files in a very convenient way. These cause monumental excitements among users who crave for knowledge sharing and socialization. They also have constantly updated computing power and random access memory for large storage capabilities as opposed to the 'button' phones which have their keyboard on the external surface of the phone. The operating system that anchors smartphone loadings come with rich configurations so much so that there is hardly anything the desktop and laptop computers can do that the smartphones cannot do. This study seeks to look into the use of smartphones by students of Moshood Abiola Polytechnic and group the gratifications they get from it into factors for the purpose of analyzing them with factor analysis statistics.

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

Statement of the problem

A summarised report of the study conducted in Uichin, Joonwon, Minsam, Changhun, Yuhwan, Subin, Koji, Gahgene, Kyong-Mee & Junehwa (2014) states that the main use of smartphones was task-oriented with goals of information seeking, communications, online transactions, and managing personal information. On the other hand, in an observational study on the use of smartphones on Stanford University campus, Ames (2013) discovers that the availability of always-on connectivity meant that the students had to exhibit the techno-social practices of balancing their extended networks with the immediate surroundings and to limit the negative impacts of smartphone usage (e.g., social pressure, and multi-tasking). The findings of Ames have indirectly implies that problem exists with the use of smartphones. Harmon and Mazmanian (2013) identifies two sides to the use of smartphones- one theme recommends deep integration of smartphones in daily life, and the other urges people toward disintegration. Although it is noted in Jollie and Liezel, (2016) that smartphone technology provides immense benefits and gratifications to users as they access and disseminate information rapidly, this allows for multitasking which, in itself could lead users to amusing themselves too excessively to a detriment. Students who consider using phones for hobby or leisure rather than communication or educational purposes seemingly compel themselves to diversionary activities and sometimes unprofitable funfair. Gilroy, (2004) notes that instead of the students to view smartphones as accomplishing tool, it is typically seen as a problem and a challenge in the classroom. There is no gainsaying the 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. But it has also exposed the users to distractions. 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 subtle bait the manufacturers of products employ to lure unsuspecting consumers into distractive pleasures.

This study sets one objective to and one research question to guide it.

Objective of the study

To examine the kinds of gratification that students seek from the use of smartphone.

Research question

What are the kinds of gratification do students seek from the use of smartphone?

LITERATURE REVIEW

Uses and gratification theory

Uses and gratification approach emphasizes positive motivation and active use of the media content that can gratify individual recipient's needs. (Griffin, 2012). Ivan, Maja and Zrinka (2014) note that the theory explores how and based on which motives recipients use the media as well as which gratification are obtained thereafter. Various scholars have come up with investigational studies on uses and gratification. However, Katz and Blumler (1974) concludes that the same

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

content can gratify different needs of varying individuals. Uses and gratification, in a general sense, according to Katz, Gurevitch, and Haas (1973). can be classified into five categories relative to the five groups of human needs They are:

a. cognitive needs which deal with acquiring information, knowledge, understanding our social environment, curiosity, exploration; it covers learning, self-education;
b. affective needs which refer to aesthetic and emotional experiences, pleasure
c. personal identity which is self-confidence, personal stability, integrity, social status, the need for self-respect;
d. integration and social interaction – family relations and friendship, connection with the outside world, the need for affiliation; and
e. escapism – the need to escape, tension release - relaxing, shifting attention from unpleasant to pleasant, emotional release and sexual arousal.

The study of Katz et al (op cit) is supported in Whiting and Williams (2013). Which posits that users of Android smartphones use computer mediated communication (CMC) for diverse activities best suited to them. For instance, some apply it for interaction, killing time, entertainment, seeking and sharing of information. Others use it for socialization, self-expression, education, surveillance and communication.

In the event of using this theory for varying research tasks, Abd El-Basit (2010) asserts that from 1990s, the uses and gratification approach have been utilized to explore the impact of the new technologies on the audience, and has been refined, revised and extended accordingly (Jin, Cropp & Cameron, 2002). Research efforts has been quite effective to understand motivations and concerns of this new type of communication including the internet. Although most of the studies that examine the use of mobile phone by students of higher learning are limited, Balakrishnan and Huck-Soo (2012) states that the summarized findings is that adopters seek gratification in the use of any technology based upon their individual needs or motivations.

The five categories, that is; cognitive needs, affective needs, personal identity, integration and social interaction, and escapism will guide the researcher in creating questionnaire which is the research instrument for this study. The cognitive needs will dwell on the educational-based advancement of the respondents that is; it will explore how respondents utilize smartphones to support learning while the pleasure needs will focus on affective faculty. Factor loadings of each gratification will be used to identify the most prominent.

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

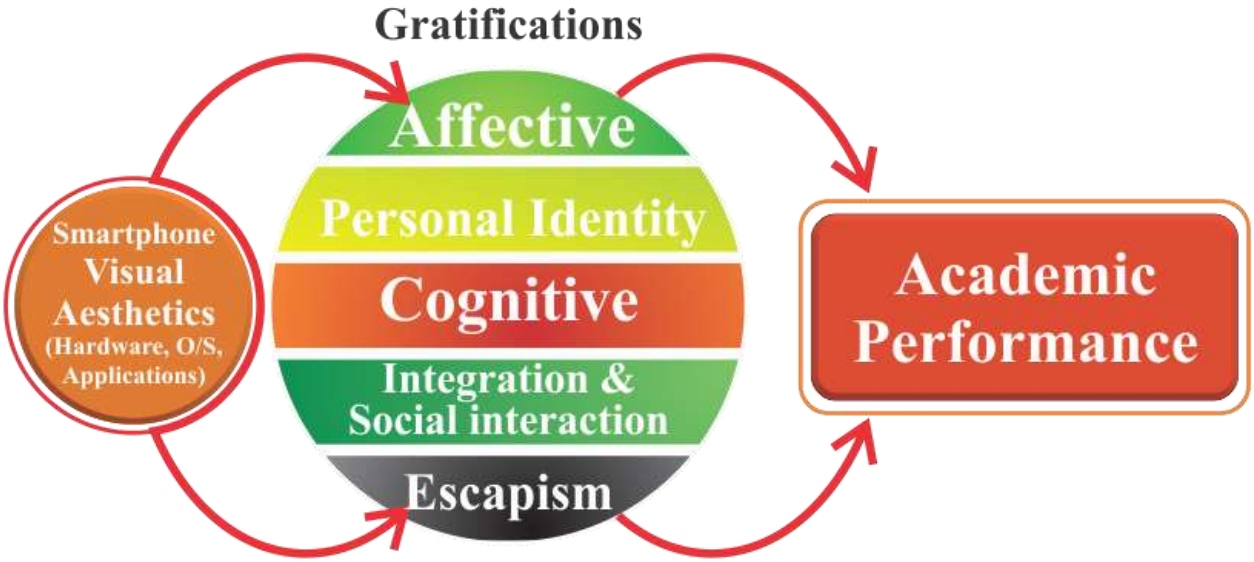

Figure 1. Research Framework
(Source: Researcher, 2017)

Visual aesthetics evaluation

The three levels of interaction in a smartphone are hardware, operating system and applications (Kuisma, 2015), and their aesthetics can be measured by parameters of heuristic evaluation which deals with visual appeal. Similar studies have applied the heuristic evaluation for smartphones running different operating systems such as Android, Windows, IOS, Symbian etc. which this study hopes to deal with. Nielsen (1994). The extracted parameters used for this study as adopted from Mathieu and Jean (2014) are:

i. Screen resolution
ii. Learnability - easy to understand
iii. Emotional effects
iv. Configuration options and shortcuts
v. Navigation and user control
vi. Visibility and system status
vii. Layout of smartphone interface

According to Mario (2013), although knowledge of the users' tasks and abilities is the key to designing effective screen displays, an objective, automatable metric of screen design is an essential aid. Tullis developed four metrics for alphanumeric displays: overall density, local density, grouping, and layout complexity. Streveler and Wasserman proposed an objective measure for assessing the spatial properties of alphanumeric screens. Sears' developed a task-dependent metric called layout appropriateness to assess whether the spatial layout is in harmony

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

with the users' tasks. Layout appropriateness is a widget-level metric that deals with buttons, boxes, and lists.

The concept of graphic design and visual aesthetics

Visual aesthetics refers to the beauty or the pleasing appearance of things. It is a bye product of graphic design induced in the eye of a person by the quality of bodily or aerial appearance. In the words of Sidney (2013), Graphic design is a creative process, where designers often find that they must defend the values of aesthetics and functionality that they are trained to bring to the design process. Meggs (1983) discusses the graphic design activity and notes that its role is to give order to information, forms, ideas, expressions and feelings to artifacts that document human experience. Graphic design elements and principles form the basis for judging aesthetic appeal of product design. The point of convergence is that, like graphic design visual aesthetics aims to improve the communication situation (Zettl, 1999) but it can be associated with more than that - it is about the art of employing pictorial elements for inducement. The pictorial concept of persuading and intensifying visuals, to support the message as well as to direct or influence consumers within ethical boundaries to develop interest product information. Its persuasive power vividly resides in its ability to alter the value and belief systems of the public.

Smartphone usage and gratification derived

Academic research has sought to understand why and how smartphones are used. The uses and gratification approach to media use explores the functional and psychological reasons that drive the use of a specific medium as well as the links between the use and effects of the media (Kelty, 2017). Because smartphones incorporate a myriad of media (email, texting, voice calls, video calls, videos, self-help apps and games), the uses and gratification approach to the use of smartphones is a viable means to learn about the hierarchy of needs that drives the use of the various smartphone functions and applications. Furthermore, the uses and gratification approach provides insight into why specific smartphone functions and applications may be more effective advertising vehicles. (ibid). there have been previous studies on mobile/smartphone use based on the motivation of the respondent. For instance, Adelabu, Sanusi, and Esiri (2015) reveal that smartphone usage among students in higher institutions has positive influence on their communication pattern. The study further shows that majority of the respondents used their smartphone for social activities and related functions. On the other hand, the work of Al-Barashdi, Bouzza, Jabur and Zubaidi (2015) on the subject of smartphone submits that there was no significant relationship between smartphone gratification and academic achievement except for self-developing and safety.

Additionally, students tend to only use their cellphones for apps and texting and not everything else the phone is capable of doing. This includes making phone calls to others. In Jesse (2015), findings of Hejab, Alfawareh and Shaidah suggest that students lack the use of smartphones as a means to support learning income and outcome. In a similar study, Jollie et al find out that socializations in forms of Facebook, Twitter and Instagram are accessorial features on the board of smartphones that are often used by college students to aid learning; for example students can calculate, take down notes and also proceed online to search for topics and solutions relative to their course of study.

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

Table 1: Gratifications derived from Mobile/Smartphone.

	Author (Year)	Top-rated Reason of Use
1.	Lusekeso K. and Gerves Mgaya (2015)	Social Purpose.
2.	North D., Johnston K. and Ophoff J. (2014)	Socialising.
3.	Kelty Logan (2017)	Personal identity and personal relationships.
4.	Jesse R. G. (2015)	Academic Purpose.
5.	Jollie N. A. and Liezel V. M. (2016)	Aid to learning.
6.	Hafidha S. A., Abdelmajid B., Naeema H. Jabur and Abdulqawi A. (2015)	Information sharing and entertainment.
7.	Tessa J. (2014)	Social communication.
8.	Nnadozie C. O., Ossai-Onah O. V., and Udo-Anyanwu (2015)	Accessing online information resources.
9.	Adelabu O., Sanusi B. O., and Esiri M. (2015)	Social activities and related functions.
10.	Osazee-Odia O. U. (2017)	Friendship development and social relations.

(Source: Authors' review, 2017)

METHODOLOGY

The study adopted survey research method which involved administration of questionnaire instrument as inventory to elicit response from the sampled respondents in Moshood Abiola Polytechnic, Abeokuta, Ogun State, Nigeria. The population is all the students of Moshood Abiola Polytechnic, Abeokuta from ND I to HND II, on both full-time and evening programmes. Purposive sampling was adopted in the sample selections. Data collected was analysed with the aid of Factor analysis which helped in the Test of adequacy of samples. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity were used to determine the suitability of the variables for factor analysis. The purpose of factor analysis was to summarize inter-relationship and establish levels of variance in decision variables as they influence the given phenomenon. A factor is simply a linear combination of variables. The linear combination is not chosen arbitrarily, but to capture the relationship among the variables. Factor analysis uses the correlation or covariance among a set of observed variables to describe them in terms of smaller set of unobservable variables. The unobservable variables, called factors describe the underlining relationship among the original variables. Factor analysis requires a set of data points in matrix form with the row and column identifying the matrix (Olorunleke, 2006), and the model for it is given as:

$$(X_i|\hat{y}, \lambda, f_i, m) = \hat{y} + \lambda f_i + \varepsilon_i$$

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

(p x 1) (p x 1) (p x m)(m x 1) (p x 1)

Where $\hat{y}$ is the overall population mean vector
λ is the factor-loading matrix
f_i is the factor score
m is the number of factors
p is the observed variables.
ε_i is the error variance
$_i$ is the number of observation

RESULTS AND DISCUSSION

Objective: Examine the kinds of gratification that students seek from the use of smartphones

In order to achieve the only objective of this study, respondents were asked questions on the gratification they seek from the use of smartphone based on the Uses and Gratification theory. Test of adequacy of samples used for factor analysis is necessary in order to determine the suitability of factor analysis for any given situation. This is normally achieved by Kaiser-Meyer-Olkin Measure (KMO) and Bartlett's Test of Sphericity. The results presented in Table 2 reveals that KMO value is 0.780 which is above 0.5, an indication of sampling adequacy. The Bartlett's Test of Sphericity with approximate Chi-Square value 0.00122 which is significant at 0.000 also confirms the adequacy of the sample.

Factor extraction by principal component analysis

The 15 variables (questions) formulated on the use of smart phones and gratification theory were subjected to factor analysis using Principal Component analysis in order to reduce them to meaningful factors based on factor loadings. The result is presented in Table 3. The effect of each item in the gratification needs was rated in each section and the result shows p-value less than 0.05 at the Cognitive Needs, Affective Needs as well as Integration and Social Interaction of 0.002, 0.02, and 0.016 respectively were presented as well. The objective was achieved by factor analysis. The results of the analysis are presented in this section.

Table 2: KMO and Bartlett's Test of Sampling Adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.780
Bartlett's Test of Sphericity	Approx. Chi-Square	0.00122
	Df	105
	Sig.	.000

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

Table 3: Factor Extraction

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.076	27.174	27.174	4.076	27.174	27.174
2	1.563	10.422	37.596	1.563	10.422	37.596
3	1.299	8.659	46.255	1.299	8.659	46.255
4	1.117	7.446	53.701	1.117	7.446	53.701
5	.960	6.403	60.104			
6	.940	6.265	66.369			
7	.908	6.055	72.423			
8	.760	5.068	77.492			
9	.674	4.494	81.986			
10	.564	3.762	85.748			
11	.529	3.527	89.275			
12	.440	2.930	92.205			
13	.437	2.910	95.115			
14	.407	2.716	97.831			
15	.325	2.169	100.000			

Table 3 reveals that four factors are extracted based on minimum of 1.0 Eigen value. The percentage of variance explained are 27.174, 10.422, 8.659 and 7.446 for factors 1, 2, 3 and 4 respectively. This gives a percentage cumulative loading of 53.701. The factor loadings were subjected to rotation by varimax in order to produce more distinct and meaningful components as presented in Table 4. By social science rule any loading value of 0.4 and above are retained for a particular factor. Where variable loads on more than one factor, it is retained in the factor with the highest value.

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

Table 4: Component Matrix

Key: CG=Cognitive, AF=Affective, PD=Personal identity, IS=Integration and social interaction, ES=Escapism.

	Component			
	1	2	3	4
CG1		0.738		
CG2		0.697		
CG3	0.458			
AF1	0.583			
AF2	0.545			
AF3	0.622			
PD1	0.71			
PD2	0.673			
PD3			0.507	
IS1				0.841
IS2		0.567		
IS3	0.643			
ES1	0.675			
ES2	0.657			
ES3	0.491			

Based on Table 4, the summary of the components of each factor is as follows:

Factor 1: Integration and Social Interaction
CG3 – sending text messages call or chat about lecture issues
AF1 – to take and edit *selfies*
AF2 - watching movies, films, listening to music and radio
AF3 - viewing pictures across folders
PD1 - social media interaction
PD2 - social media discourse
IS3 - connect with the outside world
ES1 - as an antidote for loneliness and boredom
ES2 - relaxation by watching humorous films etc.
ES3 - different things just to pass time

Factor 2: Cognitive Needs
CG1 - reading academic materials, view lecture notes etc.
CG2 - submitting and/or download class assignments
IS2 – reading news and current affairs

Factor 3: Personal Identity
PD3 – seeking and satisfying personal values

Factor 4: Basic Communication Services
IS1 – communicating with family and friends through calls, short message services (sms), social media charts etc.

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

Table 5: Scale of gratification sought by students.

		Mean	SD	α
CG1.	I use my smartphone mostly for reading academic materials and view lecture notes.	4.0	0.95	0.002
CG 2.	My smartphone is used mostly for submitting and/or download class assignments.	3.49	1.31	
CG 3.	I use my smartphone mostly for text, call or chat about lecture issues.	3.81	1.10	
AF1.	I use my smartphone mostly to take and edit *selfies* and friends' pictures .	3.40	1.29	0.02
AF2.	Watching movies, films, listen to music and radio constitute major use of my phone.	3.72	1.18	
AF3.	My phone is essentially engaged in viewing pictures across folders, recollect memories about my loved ones and exciting moments.	3.81	1.14	
PD1.	Social media interaction takes bulk of my use of smartphone (with apps such as Facebook, WhatsApp, Instagram & Twitter.	3.71	1.21	0.67
PD2.	Smartphone afford me a platform to express my opinion about social media discourse, express my feelings, and make my presence known in social circles whether online or offline.	3.58	1.89	
PD3.	Smartphone's use help to seek and satisfy my personal values.	3.69	1.13	
IS1.	I use my phone mainly for communicating with family and friends through calls, SMS, social media chats.	4.01	1.09	.016
IS2.	My phone is used majorly for reading news, current affairs, weather forecasts.	3.60	1.13	
IS3.	Smartphone is manly used to connect with the outside world, search for new friends and social affiliations.	3.85	1.03	
ES1.	Mere interaction with my phone helps to conquer loneliness and boredom.	3.82	1.10	0.378
ES2.	I mostly use my phone to watch humorous movies, read and share social media posts, cartoon animations, football live updates.	3.64	1.29	
ES3.	I mostly use my phone on different things just to pass time.	3.83	1.24	

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

FINDINGS

From the results presented in Table 5, results of Factor Loadings show that the most gratified use of smartphones among Students of Moshood Abiola Polytechnic, Abeokuta is Integration and Social Interaction (IS) with percentage of variance - 27.174. Activities involved in satisfying this leisure-based desire include sending messages, making calls and chatting, taking and editing selfies, enjoying various multimedia files, social media interactions, and other things aimed at passing time. Social interaction is trailed by cognitive needs both for immediate academic purpose and personal development, it has a variance of 10.422%; the activities involved in seeking this gratification from smartphone use are reading academic materials, view lecture notes, submitting and/or download class assignments as well as reading news and current affairs.

This result is consistent with that in Lusekeso and Gerves (2015) The satisfaction that students seek most from the use of smartphone is the need to communicate with family relatives, friends, connecting with the outside world and seek new relationships even though this is at variance with the submissions of Jesse (2015) and Jollie et al (2016).

CONCLUSION

Gratification is the pleasure or maximum enjoyment that people derive from a product or enterprise. Android smartphones are commonly found among students and they find pleasure in using it for different reasons such as integration and social interactions, cognitive needs, personal identity and basic communication services. Findings of this study show that students of Moshood Abiola Polyteechnic adopt smartphones for integration and social purposes than any other reasons listed. Various literatures in the public domain were reviewed in order to expand the frontiers of knowledge in the area of smartphone usage in tertiary institutions it is apparent in those literatures that smartphones are accessories serving as a means to an end and could be substantially useful in making life easy for the user. But be that as it may, it has its limitation on the other hand. It could be abused and when it is abused, could cause distraction and eventual failure to students. And because it is multifunctional with computer-based applications it is easy for users, especially the youths to perpetrate fraud and commit all manner of economic crimes with it. However, the use of smartphones is proving to be a proliferating trend that civilization has brought to the education sector in Nigeria.

References

Abd El-Basit A. H. (2010): Uses and Gratification of Online Advertising a Comparative Study between Germany and Egypt. A dissertation submitted to the Technical University of Ilmenau (Germany) for the degree of Doctor of Philosophy (PhD) in Mass Communication.

Adelabu O., Sanusi B. O., and Esiri M. (2015): Smartphones and Communication Pattern Among Students In Higher Institutions. Singaporean Journal of Business Economics, and Management Studies. Vol.3(12).

Al-Barashdi H. S., Bouzza A., Jabur H. N and Zubaidi A. (2015): Smartphone Gratification among Sultan Qaboos University Undergraduates: A Mixed Approach Investigation. British

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

Journal of Education, Society and Behavioural Science. 10(1): 1-17, Article no BJESBS.18753.

American Association for the Advancement of Science (2009). Vision and change: A call to action. Washington, DC: Author.

Balakrishnan, V. and Huck-Soo, L. (2012): Mobile Phone and Short Message Service Appropriation, Usage and Behavioral Issues among University Students. Journal of Social Sciences, 8 (3): 364–371.

Crilly, N., Maier, A., and Clarkson, P. J. (2008). Representing Artefacts in Media. Modelling the Relationship Between Designer Intent and Consumer Experience. *International Journal of Design, 2(3), 15-27.*

Desnet, P. M. A. (2002). *Designing emotions*. Delft, The Netherlands: Delft University of Technology.

Gangi, F. and D'Angelo, E. *(*2016*).* The Virtuous Circle of Corporate Social Performance and Corporate Social Disclosure. Modern Economy, 7, 1396-1418.

Gilroy, M. (2004). Invasion of the classroom cell phones. Education Digest, 69, 56-60.

Griffin, E. (2012): *A First Look at Communication Theory*. New York: McGraw-Hill.

Ivan T., Maja M. and Zrinka S. (2014): Uses and Gratification Theory – Why Adolescents Use Facebook? Medij. Istraz. (god. 20, br. 2) 2014. (85-110). Izvorni Znanstveni Rad. UDK: 316.77:159.922.8. Zaprimljemo: 30 lipnja.

Jesse R. G. (2015): Smartphone and App Usage AMong College Students: Using Smartphones Effectively for SOcial and Educational Needs. 2015 Proceedings of the EDSIG Conference. USA.

Jin, Y., Cropp, F., & Cameron, G.T., (2002): Chinese students and scholars in the U.S. :A Study on their Chinese Portal Site Use. Submitted for consideration to the Mass

Jollie N. A. and Liezel V. M. (2016): Smartphones usage among college students. IMPACT: IJRET. ISSN (E): 2321-8843. Vol. 4, issue 3, March 2016, 63-70.

Jordan, P. W. (2000). *Designing pleasurable products: An introduction to the new human factors*. London: Taylor & Francis.

Katz, E., Gurevitch, M., & Haas, H. (1973): On the Use of the Mass Media for Important Things. American Sociological Review, Vol. 38: 164–181.

Kelty Logan (2017): Attitudes towards in-app advertising: a uses and gratification perspective. Int. J. Mobile Communications, 15(1).

Kibona, L. and Mgaya, G. (2015). Smartphones" effects on academic performance of higher learning students: A case study of Catholic University – Iringa, Tanzania. Journal of Multidisciplinary Engineering, Science and Technology, 2(4), 777-784.

Kloser, M. J., Brownell, S. E., Chiariello, N. R. & Fulami, T. (2011). Integrating teaching and research in undergraduate biology laboratory education, PLOS Biology, 9. E1001174.

Kubey R. W, Lavin M. J and Barrows J. R (2001): Internet use and collegiate academic performance decrements: early findings. Journal of Communication. 2001; 51:366–382.

Kuisma S. (2015): Opportunities and Challenges of Touch Interfaces. Tampere University of Applied Sciences, Degree Programme Thesis in Media.

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

Lusekeso K. and Gerves M. (2015): Smartphones' Effects on Academic Performance of Higher Learning Students. Journal of Multidisciplinary Engineering Science and Technology (JMEST).ISSN:3159-0400. 2(4).

Mathieu Z. and Jean V. (2014): Towards an Evaluation of Graphical User iNterfaces Aesthetics based on Metrics. Research Challenges in Information Scienc (RCIS), 2014 IEEE International Conference.

Meggs B. P. (1983): A History of Graphic Design. Van Norstran. New York

National Research Council (2003). BIO2010: Transforming undergraduate education for future research biologists. Washington, DC. National Academies Press.

Nielsen, J. (1994): Heuristic Evaluation in Usability Inspection Methods. Nielsen, J., and Mack, R.L. (Eds.), John Wiley & Sons, New York.

Roozenburg, N. F. M. and Eekels, J. (1995). A review of product design: Fundamentals and Methods. New York, John Wiley and Sons

Sidney M. N. (2013). Application of African Aesthetics and Typographical Principles in the Re-Branding of Aquarium Bar and Restaurant in Nairobi. A Research Paper Submitted in Partial Fulfillment of the Degree of B.A. Design School of Arts and Design, University of Nairobi, Kenya.

Whiting, A. and Williams D. (2013): Why People Use Social Media: A Uses and Gratification Approach. Qualitative Market Research: An International Journal 16(4): 362–369.

Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)