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Social Utility of Mobile Phone Technology by Undergraduate University Students in Nairobi, Kenya

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ABSTRACT

This study investigated social utility as a gratification factor influencing mobile phone technology use by public university undergraduate students in Nairobi, Kenya. The objective of the study was to examine the influence of social utility on undergraduate university students' use of mobile phone technology. The study employed media technological determinism theory. Target population was 246,871 undergraduate university students in public universities in Nairobi, Kenya. The study employed quantitative design. Self-administered questionnaires were used as data collection tools. The study utilized purposive sampling to arrive at a sample size of 573 undergraduate students. The data was analyzed using descriptive statistics and then processed using the Statistical Package for Social Sciences (SPSS) version 23. Findings revealed that mobile phone technology has become essential in social utility activities among undergraduate university students. The research concluded that the more the need for social utility, the more the need for mobile phone technology use among undergraduate university students. The research recommended that software developers should develop a specific mobile phone software for university students to use for social utility and that another research could be carried among postgraduate students and among private universities to find out other gratification factors that may be influencing mobile phone technology use.

Keywords: Social Utility, Mobile Phone, Technology, Use.

INTRODUCTION

Mobile phone has entrenched itself in the modern world as an equipment that can be used for many functions besides communication. Its major strength lies in the fact that it is portable and has multiple uses, especially the smart phones (Jiantti, 2015). In Kenya, technological innovation spearheaded by Safaricom's *M-Pesa* brand has given the mobile phone a new meaning where the mobile phone numbers are used as banks with the mobile phone number acting as the bank account number. The facility by Safaricom and other mobile phone operators in Kenya has made the banks device ways of partnering with mobile phone service providers in order to get a share of the money transfer market and also to remain relevant in the fast-changing world where money and technology matters. University students use this service to

send and receive money from or to their friends and relatives. This use has manifested itself in the increasingly popular phone-based gambling games where millions of shillings are at stake. This habit has been aggravated by the mobile phone capability of being everywhere, every one, every time (Yan, Chen & Yu 2013).

Undergraduate university students are not left behind in exploiting the advantages of the mobile phone technology, which include calculator, clock, games, video function, calendar, FM radio, music player, picture identity, streaming multimedia, speakerphone, hard drive and camera among others. The mobile phone seems to be handy in fulfilling or gratifying these needs. In a research titled "Mobile phone Usage at the Kenyan Base of Pyramid", the authors, Crandall, Otieno, Mutuku, Colaco, Grosskurth, and Otieno, (2012), found that of the mobile phone applications and services, 100 per cent of Kenyans use calling services, 85.3 per cent use SMS services, 84.4 per cent use M-Pesa services, 72.6 per cent use credit/airtime services, 12.1 per cent use mobile phones to track lost money, while 18.9 per cent use it to monitor commodity prices. On the other hand, while striving to get maximum gratification from the mobile phone students invariably find themselves captivated by the many capabilities and the wide range of uses to choose from. In this regard, therefore the media technological determinism theory would provide a better theoretical framework through which to examine the gratification factors influencing mobile phone technology use by undergraduate public university students in Nairobi City County, Kenya.

Current researches have estimated that 100 percent of university students own and use mobile phones and that all of them bring these devices to class (Ugur & Koc, 2015). Students use mobile phones for discussion, photographs and video, podcasting, video recording, calculators, polling, research, calendars, taking notes and scavenger hunts (Kolb, 2011). This study sought to find out the social utility factor influencing undergraduate university students to use their mobile phone technology.

PROBLEM STATEMENT

Mobile phones as interpersonal media have extraordinary technology that make them attractive and engaging, (Economides & Grousopolou, 2008), and these attributes have made them to attract every segment of the society. As a result of this, the mobile phone device has quickly spread among users. Students use mobile phones for discussion, photographs and video, podcasting, video recording, calculators, polling, research, calendars, taking notes and scavenger hunts (Kolb, 2011). However despite the numerous advantages of mobile phones, university students exercising their freedom of expression by engaging in such practices as text bullying, filming violent incidents, downloading inappropriate materials, and harassment as ways of social utility. The increased access and availability of mobile phone to undergraduate university students and the freedom to use it as they please, can lead to abuse which can be a challenge to both the students and the university administration. The purpose of this study therefore was to examine the social utility as a factor that could be influencing mobile phone use among undergraduate public university students in Kenya.

Objective of the Study

To examine the influence of social utility on undergraduate university students' use of mobile phones.

Purpose of the Study

The purpose of this study was to examine the social utility as a gratification factor that could be influencing mobile phone technology use among public university students in Nairobi, Kenya.

MEDIA TECHNOLOGICAL DETERMINISM THEORY

Media technological determinism theory which is the relation between technology and society guided this study. The term was coined by Thorstein Veblen (1857-1929). In this theory, technology is seen as the prime mover in history where new technologies transform society at every level including institutions, social interactions and individuals, (Chandler, 1995).

Technological determinists interpret technology in general and communications technology in particular as the basis of society in the past, present, and even in future. New technologies transform society at every level including institutions, social interactions and individuals, (Chandler, 1995). Pinch & Bjiker (1984) argued that technology design is an open process which can produce different outcomes depending on the social circumstances of its development and is therefore subject to interpretative flexibility. Karl Marx had said that technological development determines the kind of society that will emerge while Marshall McLuhan who was another proponent of the media technology determinism posited that technological inventions lead to development of the modern world, (Chandler, 1995).

Media is said to be a metaphor - a symbolic form - in which information is encoded. Different media have different intellectual and emotional biases, because of the accessibility and speed of their information, different media have different political biases, because of their physical form, sensory biases, technical and economic structure and content biases (Postman, quoted in Chandler, 1995).

METHODOLOGY

This study employed a quantitative methodology research design that assisted in the collection and analysis of numerical data.

Sampling Frame

The sampling of universities was done purposively. The sample included six public universities with campuses in Nairobi City County, namely University of Nairobi, Kenyatta, Egerton, Maseno, Moi and Jomo Kenyatta University of Agriculture and Technology. The sample size was 573 respondents out of the 246, 871 students (Bartlett et al, 2001) with the formula:

$$\frac{n = z^2pq}{e^2}$$

Where n = sample size

Z = Standard normal value (1.96 for 95% C.I)

P = Proportion of the population having desired characteristics (default = 0.5)

e = Margin of error (default 0.05)

This study adopted the Bartlett et al (2001) formula for oversampling as follows:

$$n2 = \frac{\text{Minimum Sample Size}}{\text{Anticipated Return Rate}}$$

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Where n2 = sample size adjusted for response rate
Minimum sample size = 384
Anticipated Return Rate = 67% (Bartlett et al, 2001)
Therefore, n2 = 384/.67 = 573

This therefore brings the sample to participate in the study to 573 students. (Bartlett et al, 2001)

Data Collection Methods

The study used quantitative data. The data was collected using self-administered questionnaire. The questionnaire had questions, which were aimed at producing greater validity and reliability of the outcome of the study. Questionnaires were given to the respondents who were asked to fill and return to the researcher.

Data Analysis and Presentation

The data was cleaned, coded, and then entered. Entry was done twice to minimize the incident of error. Data was integrated. Factor analysis was used to analyze the factor that influence mobile phone technology (Creswell, 2011). Descriptive statistics of mean and standard deviation were used to answer the research questions. The data was analyzed using the SPSS (version 23).

RESULTS AND DISCUSSION

Descriptive Statistics for Social Utility

There were five items that used a five-point Likert scale to measure the respondents' response to the areas being examined where 1 represented strongly disagreed and 5 represented strongly agreed. The results were as presented in Table 1 below:

Table 1: Descriptive Analysis for Social Utility

	SD %	D %	N %	A %	SA %	Mean	Std. Deviation
I usually depend on my medium for my communication needs	2.2	4.0	11.1	42.6	40.1	4.14	.923
I regularly send and receive e-mails/SMS	3.0	2.5	7.4	37.0	50.1	4.29	.927
I frequently use my medium to harass others	59.7	20.3	8.2	8.4	3.5	1.76	1.127
My privacy is frequently exposed	39.3	24.8	20.0	10.0	6.0	2.19	1.225
Frequently notifies me of security issues	5.2	11.2	29.9	35.4	18.2	3.50	1.075

Key: SD=Strongly Disagree, D=Disagree, N= Neutral, A=Agree, SA=Strongly Agree

From the results, the respondents were asked whether they usually depend on their medium for their communication needs. Majority, 42.6% agreed and 40.1% strongly agreed. On average the respondents agreed. Majority of the respondents, 50.1%, strongly agreed that they regularly send and receive e-mails/SMS and 37.0% agreed. On average, the students agreed as indicated by a mean value of 4.29 and a standard deviation of 0.927. This dependency on the device tends to agree with Tessa (2014), who stated that it is particularly true when people use the mobile phones excessively in public, they are signaling that they have got this shiny object, this status

symbol, their iPhone or Android or Blackberry and that they have got important people to talk to or text, who are, may be, even more important than the people right in front of them.

The respondents shied off from admitting to using the device to harass others with 80% strongly disagreeing. On average the students disagreed as indicated by a mean of 1.76 and a standard deviation of 1.127. The findings imply that harassment of others and exposing privacy were some of the least influencers of mobile phone technology use among university students in Nairobi, Kenya. A study done by Ugur (2015), found that most mobile phone technology users use the device to fight boredom, entertain themselves and stay connected to the outside world. This research tends to agree with Ugur (2015). Equally, the respondents denied that their privacy was frequently exposed by use of mobile phone technology at 64.1% strongly disagreeing with a mean value of 2.19 and a standard deviation of 1.225. However, an overwhelming 53.6% admitted that mobile phone technology frequently notifies them of security issues. This was also indicated by a high mean value of 3.50 and a standard deviation of 1.075.

The respondents further asked to state their other social utility mobile phone needs in their life and the responses were captured in Table 2 below.

Table 2: Other Social Utility Mobile Phone Needs

	Responses		**Percent of Cases**
	N	**Percent**	
I use computer for class issues	2	2.4%	3.3%
To communicate to friends and family	7	8.2%	11.5%
Privacy	3	3.5%	4.9%
Sending and receiving funds	3	3.5%	4.9%
Conferencing	2	2.4%	3.3%
Opera news	1	1.2%	1.6%
Chatting	10	11.8%	16.4%
You tube	2	2.4%	3.3%
Games	4	4.7%	6.6%
Music	4	4.7%	6.6%
Online lectures	1	1.2%	1.6%
Entertainment	11	12.9%	18.0%
Trending news	1	1.2%	1.6%
Television	1	1.2%	1.6%
Laptops	2	2.4%	3.3%
Money	1	1.2%	1.6%
Homestead	1	1.2%	1.6%
Social hall	1	1.2%	1.6%
Projectors	1	1.2%	1.6%
Social media	15	17.6%	24.6%
For business ideas	1	1.2%	1.6%
Creating job networks	1	1.2%	1.6%
I do research	3	3.5%	4.9%
Education	3	3.5%	4.9%
Trainings	1	1.2%	1.6%
Gym	1	1.2%	1.6%
Co-curricular activities	1	1.2%	1.6%
Health services	1	1.2%	1.6%
Total	85	100.0%	139.3%

Among other mobile phone needs, social media was listed by a bigger percentage of respondents (17.6%0, followed by entertainment (12.9%), chatting (11.8%) and communicating to friends and family (8.2%). The fact that social media led when the respondents were asked to state their other uses of mobile phones points at the central role social media is playing in university students' use of their mobile phones. As students, one would have normally expected cognition issues to lead the list but strangely, they were the least influencers of mobile phone use at 1.2% for online lectures, 1.2% for training and another 1.2% for co-curricular activities. This also suggests to the priority usage the undergraduate university students put their mobile phones.

Correlation Analysis for Social Utility

A Pearson's correlation analysis was performed using mobile phone technology by public university students as the dependent variable and social utility as the independent variable. The results were presented in Table 3 below:

Table 3: Pearson's Correlation Analysis

		Social Utility	Mobile Use Index
Social Utility	*R*	1	.171**
	P		.001
	N		402

From the results, it was observed that there was a positive and statistically significant linear relationship between social utility and mobile phone technology use levels by public university students, $r = 0.171$, $p = 0.001$. This was indicated by significant probability values found to be less than 0.05 at 95% confidence level. This implied that social utility was significantly related to mobile technology use levels by public university students.

Regression Statistics for Social Utility

A simple linear regression was performed with social utility as the independent variable and mobile phone technology use levels by public university students as the response or dependent variable. The model established whether there was a statistically significant relationship between mobile phone use and social utility and then later establishing a predictive model. The findings were presented in two Tables, 4 and 5 below:

Table 4: Model Summary for the Regression Model of Social Utility and Mobile Phone Technology Use

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.171[a]	.029	.027	.77724

a. Predictors: (Constant), Social Utility

From the results in Table 4, cognition was found to explain 2.9% of the change in mobile phone use technology. This was indicated by a coefficient of determination value of 0.029 (R^2=0.029).

Table 5: Model Coefficient for the Regression Model of Social Utility and Mobile Phone Use

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.508	.198		12.653	.000
	Social Utility	.213	.061	.171	3.477	.001

a. Dependent Variable: Mobile Use Index

The model below has been obtained from the study results in Table 5:
Mobile phone technology use = 2.508 + 0.213 * social utility

The association between social utility and mobile phone technology use was found to be significant and positive, β = 0.213, t = 3.477, p = 0.001. This means that there was a significant association between social utility and mobile phone technology use. In addition, the findings indicate that a unit increase in social utility increases the level of mobile phone technology use by 0.213 units.

The scatter diagram in Figure 1 below further illustrated this relationship between social utility and mobile phone use.

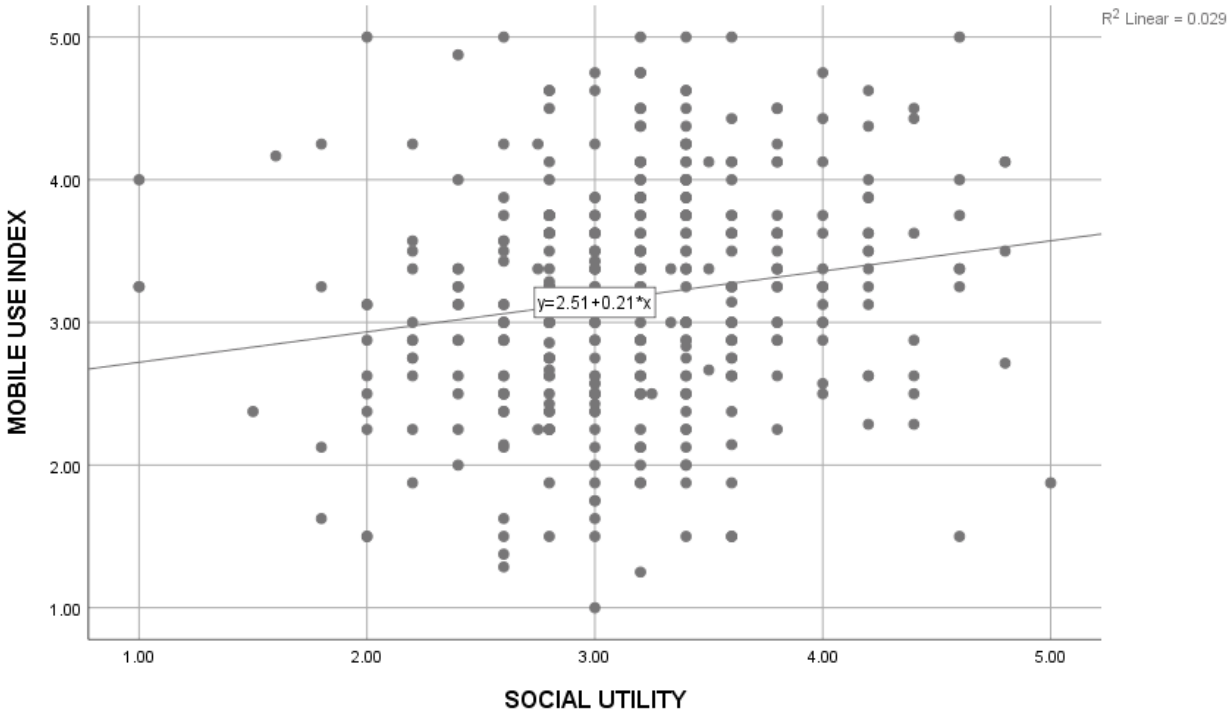


Figure 1: Scatter Diagram Showing the Relationship between Social Utility and Mobile Phone Technology Use

ANOVA Analysis for the Regression Model of Social Utility and Mobile Phone Technology Use

Analysis of variance (ANOVA) was used to test the research claim for the objective of this study. The null and the alternative hypothesis are stated as follows:

H0: There is no significant influence of social utility on mobile phone use levels among undergraduate university students.

Ha: There is significant influence of social utility on mobile phone use levels among undergraduate university students.

Table 6: ANOVA Analysis for the Regression Model of Social Utility and Mobile Phone Use

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.304	1	7.304	12.091	.001[b]
	Residual	241.642	400	.604		
	Total	248.947	401			

a. Dependent Variable: MOBILE USE INDEX
b. Predictors: (Constant), SOCIAL UTILITY

The results in Table 6 on analysis of variance in the case of regression between social utility and mobile phone technology use among undergraduate university students, was used to test whether the model with social utility as the explanatory factor was statistically significant in predicting mobile phone use. The results again were used to test the hypothesis of the study which entailed testing whether the coefficient of social utility in the model was equal to zero or not (H_0: $\beta_3 = 0$ vs H_1:$\beta_3 \neq 0$).

The results proved that there was sufficient proof or evidence to reject the null hypothesis concluding the alternative which stated that there was a significant influence of social utility on mobile phone use levels among undergraduate university students, (F = 12.091, p = 0.001). Therefore, social utility was a statistically significant predictor of mobile phone technology use.

DISCUSSION OF SOCIAL UTILITY

The objective of the research aimed at examining the influence of social utility on undergraduate university students' use levels of mobile phone technology. Pearson's and Spearman rho correlation analysis were used. It was established that the statements asked on social utility did have an influence on mobile phone technology use levels by university undergraduate students. Mobile phones can also be of social utility where the need to strengthen contact with family, friends and others in society is fulfilled (Dominick, 2001).

Influence of Social Utility on Undergraduate University Students' Use Levels of Mobile Phone Technology

The objective of the research was to examine the influence of social utility on undergraduate university students' use levels of mobile phone technology. The research found out that social utility had a high mean. This implied that there was an influence of social utility on mobile phone technology use levels by public university students. Also, it was found that there was a correlation between mobile phone use and social utility activities. The hypothesis was tested and the results were that, there was no influence of social utility on undergraduate university students' use levels of mobile phones. The null hypothesis was rejected. These results indicated that social utility influences mobile phone use among undergraduate university students in Nairobi, Kenya.

The higher the mobile phone technology usage and the higher the need for social utility, the higher the need for mobile phone technology usage. This could be taken to mean that social utility as a gratification factor drive the mobile phone technology use among public university undergraduate students in Nairobi, Kenya.

RECOMMENDATIONS

1. This research had established that undergraduate university students in public universities in Nairobi City County, Kenya, do use mobile phone technology to gratify their need for social utility. Behavior change advocates could latch on to this technology to provide and / or avail platforms and messages directed at university students using this kind of technology. The advocates would be sure that their messages would be well received as their targets are only too eager to use mobile phone technology for social utility and in the process consume the advocator's message.
2. The research dealt with undergraduate university students who were aged between ages 17 and 29 years. The policy makers who target the youth in this age group who are in learning institutions could design policies to regulate mobile phone technology use by the youth in learning institutions.
3. This research found that university students use mobile phone technology for social utility. Following this understanding, software developers could develop some software that is targeted at university students for their social utility.

SUGGESTIONS FOR FURTHER RESEARCH

Further research could be done among undergraduate university students in private universities in the same locality to see if there is any difference. Equally, another research could be done among post-graduate university students to see if the gratification factors influence their use of mobile phone technology differently.

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