Exploring Mobile Phone Usage at Higher Education: A Case Study of Kampala University, Uganda

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ABSTRACT

Cell phone that is used for multiple purposes and functions across the world is considered as the fastest growing technology of 21st century. This paper surveyed the usability of cell phone amongst the undergraduate students of Kampala University, studying under the School of Computer Science and Information Technology. A survey questionnaire approach as a research method was used to collect data from the respondents. The findings of the study revealed that most of the Kampala University students own smart phones and they are using them to carry out various activities that include calling, sending and receiving email, sending and receiving text messages, scheduling appointments, banking, watching movies, listening audio clips, on line shopping, library, interacting on social media networks, playing non-academic interactive games, and reading documents.

General Terms

Cell phone

Keywords

Mobile phones, evolution of mobile devices, mobile phone usage, undergraduate students, Kampala University.

1. INTRODUCTION

Past three decades witnessed a tremendous growth in the advancements of mobile technology. Cellphone innovations have changed the human lives in terms of communications. In recent times, mobile phone has become a necessity for the society.

The middle and upper class people were main users of mobile phones since its inception (cited in [1]). Cellphones were primarily used in the sales and business world, but not often for personal use like today. Research shows that the first cellphone system began to operate in 1979 and number of subscribers increased significantly by mid-1980 [1]. And the smart phone users worldwide were more than triple from 165 million to over 500 million from 2009 to 2012 (cited in [2]).This statistics suggests that mobile phone use is growing at a rapid pace.

In 2014, cell phone entry in the developed countries was 128% of their population whereby in the developing countries it was around 89% of the population [3]. During the early days of telephony, only landlines telephones or wired telephones were available. However, the current era of technology innovations has replaced the wired telephones with portable devices enabling to communicate with anyone, anywhere, anytime [4] and provides users the access to correspondence facility. The first Generation (1G) of cellphones started in 1980 which were offering only voice communication service without data communication functionality. The first generation phones were based on analogue signals [3]. After 1G, the second Generation (2G) mobile communication systems were introduced in 1990s arguably with a multitude of other features as compared to the earlier generation. Moreover, 2G phones were digital.

The second generation system services included voice & data transmission, short message services (SMS), picture message services, multimedia message services (MMS), General Packet Radio Service (GPRS) and E-mail [4]. 2G cellphones provided data transmission rate of 64kbps with roaming capability and were relatively small in size than 1G unites. 2G was followed by third generation (3G) mobile phones, presented in 2000 that enabled to combine high speed mobile data access with Internet Protocol (IP) based services [5]. 3G was built on the Universal Mobile Telecommunication Systems (UMTS).

3G systems were meant to support the data rate 144 kbps for high mobility and 2 Mb/s in a fixed location [6]. 3G systems had new features such as faster data rates, provision for multimedia applications (video and photography), enabling access to services including mobile television, GPS (global positioning system), video call, video conferencing, and fast mobile internet. 3G technology also allowed the mobile service providers to know the location of the handset using the service [7]. Afterwards, another generation (4G) of mobile phones came in 2010-2015. 4G integrated technologies and protocols that could provide a secure and complete IP based packet-switched network optimized for data [8].

The term 4G, coined by the ITU and its Radio communication sector (ITU-R) was globally accepted definition to refer to the fourth generation of mobile wireless services [4]. In addition, 4G provides its users very high speed network connection (100Mbps for outdoor and 1Gbps for indoor) environments, low latency and good coverage. However, 4G handsets have some disadvantages such that it is costly and consumes more power and is a complex hardware with higher data costs for users. Fifth generation of mobile phones (5G) is expected in 2020 with added distinct features and services [9].

The outcome of the various generations of the mobile devices resulted into the improvement in the computing performance of cellphones with new features and capabilities such as audio/video conferencing, storing data, accessing the Internet, conducting online business, the use of Wi-Fi, and GPS among others, apart from making phone calls, and Short Message Services (SMS)[10]. The aforementioned characteristics of mobile phones work as catalyst to attract the attention of students in the universities in the developing countries [11].

Literature shows that there have been several research efforts (e.g., [12], [13], [14]) on mobile phones usage in several countries in the world. However, there is little or no work seen on mobile phone use in the universities in Uganda. To fill this research gap, this study analyzes the survey data collected from undergraduate students of Kampala University, Uganda that would in result provide insights to help designers and researchers in developing an appropriate ICT solution for emerging economies.

2. LITERATURE REVIEW

This section highlights on the past research in the area of mobile phone usage by university students in various parts of the world.

Masika et. al., [15] conducted the research on the use of mobile learning technology among final year medical students in Kenya and found that majority (88%) of the students surveyed were owning smart phones and larger percentage of them were using them for academic purposes.

A similar study on usage of cellphones by female students in University India was carried out by Kushwaha [12]. The study findings suggested that students use their portable devices for calling, chatting, accessing social media, watching video clips, contacting friends, sending text messages, and surfing Internet.

In Nigeria, Mojaye [13] study results suggested that university students use mobile phones for personal convenience, access to information, and instructional material. However, some adverse effects were also listed by the respondents that include distraction during the lecture, reducing cognitive ability, cheating during examinations, and involving in cybercrimes among others.

The research results by Quist and Quarshie [14] in Ghana, indicated that college students use mobile technologies for various activities which include; listening to music, playing games, watching movies, social networking, work-related research, educational research, religious programmes, personal finance, current events and making & receiving calls.

3. RESEARCH METHODOLOGY

The survey Questionnaire method was employed to achieve the objectives of the study. The survey research approach is considered as the preferred choice by researchers for collecting original data from a large population. The Survey methods are widely used and acknowledged research approach [14]. Moreover, the concept of collecting data from a small sample of population to be an accurate representation of a larger sample has also become a common practice among researchers.

The study designed a survey questionnaire that comprised of mainly two sections. The section I was meant to gather the demographic information from participants, whereby section II collected data regarding mobile devices.

The research was conducted among the undergraduate students of the School of Computer Science and Information Technology at Kampala University, Kampala, Uganda at the main campus of the University located at Ggaba. The Kampala University is a private and Chartered institution of higher learning which has several other campuses within the town Kampala and other parts of the country. Fascinated

3.1 Sampling

A sample can be considered as a part or portion of a population. The study population may not necessarily means the people, it can be total quantity of objects or cases which are subjects of the research [16]. This research used Convenient Sampling technique of non- probability design as it was found more appropriate. In convenient sampling (also known as Haphazard Sampling), a researcher can choose participants who are conveniently available and are ready to participate in the study [17]. When using convenient sampling, it is necessary that the members of the target population are accessible by the researcher.

3.2 Study Participants

This paper was conducted at the context of School of Computer Science and Information Technology of Kampala University, Uganda. The Participants of the study comprised of undergraduate students of the school.

3.3 Research Procedures

The copies of a paper based survey questionnaire were distributed among the students through their respective lectures in the beginning of the lectures. Students were assured of the confidentiality and purpose of the research in the cover letter. The respondents were given few minutes to provide answers to the various items in the research document, at the end of the lecture. Thereafter, the lecturers concerned collected the completed survey questionnaires from the students.

3.4 Statistical Procedures

In this empirical research, online resources were used for the computation of frequencies and percentages of participants' responses to the items of questionnaire.

4. RESULTS AND DISCUSSION

4.1 Respondents' Demographic Background

This subsection provides the summary of the demographic characteristics of the respondents. The survey results indicate that a total of 38 students from School of Computer Science and Information Technology, Kampala University, Uganda took part in the case study. Table1 shows that the majority 33(86.84%) were male and few 5(13.16%) were female in the sample. In addition, it was also noted that only 2(5.26%) were below 20 years of age, 36 (94.74%) were in the age range of 20-30 years and there was no respondent whose age was 30 years or above as shown in the table.

Table 1. Respondents' gender and age

Gender			
Male		Female	
33(86.84%)		5(13.16%)	
Age			
Below 20 Years	20-30 Years	30-40 Years	40 Years & above
2(5.26%)	36(94.74%)	-	-

4.2 Respondents' Device Category

University students consider some features of their interest when purchasing mobile phones. However, majority of students compare the extra price of desired features with original price of the device before making the final decision as the price is the major factor for a university student in developing countries.

This section highlights the types of mobile devices owned by the respondents. The survey results as presented in Table 2 show that among the total 38 students who participated in the survey, 9(23.68%) are having I-Phones, 1 (2.63%) student uses Blackberry, and 25(65.79%) the majority own other type of smart phones. It should be noted that I-Phone and

Blackberry are a part of a particular category of smart phones. The survey results also indicate that 1(2.63%) student owns a PDA and 2(5.26%) are having regular cellphones.

Table2. Category of cellphones

Category of Portable Device	Frequency
I-Phone	9(23.68%)
Blackberry	1(2.63%)
Smart Phone(Other type)	25(65.79%)
Regular Cellphone	2(5.26%)
PDA	1(2.63%)
Total	38(100%)

4.3 Mobile phone use by students

Among the university students the cellphones are very popular, increasing their social networking and providing a sense of security as they can seek immediate help when necessary [18]. The literature shows that students of higher institutions in developing countries use mobile phones in their daily lives for various activities including socializing, as well as for safety and privacy purposes at all times, at home, in lecture rooms and restaurants, and when driving [19].

While the usage of cellphone by students in the universities cannot be overlooked, they need to be sensitized on the positive and negative effects associated with these devices. The users should read and strictly follow the instruction by manufacturers concerning internet enabled phones to avoid their radiation effects on health [20]. The studies have shown that excessive use of these technologies can also trigger some

psychological problems such that students can become addicted to their devices.

In the current study, the respondents were asked to indicate the purpose of their mobile phone usage under the following classifications: phone communication, sending and receiving email, sending and receiving text messages, scheduling appointments or tasks, banking, watching videos, listening audio clips, shopping, library, networking on social media (Facebook, Twitter, and LinkedIn), playing non-academic interactive games, and reading documents as listed in Table 3.

The analysis of the results of mobile devices use by students reveal that among the 38 students who participated in the research survey, all of them are using their devices for making and receiving phone calls. On response to item 2, the study results indicate that 28(73.64%) use their devices for sending and receiving e-mail. For item 3, it was found that 32(84.21%) are using their mobile phones for sending and receiving text messages along with 20(52.63%) who schedule appointments and tasks. The findings also reveal that 20(52.63%) of respondents use the phone for banking, 32(84.21%) for watching videos, 26(68.42%) for listening audio clips, 21(55.26%) for shopping, 32(84.21%) for library, 19(50%) for networking on social media (Facebook, Twitter, and LinkedIn), 29(76.31%) for playing non-academic interactive games, and 30(78.95%) for reading documents amongst those who responded to the questions in the questionnaire.

In addition, it was noted that 13(34.21%) respondents do not carry out any personal activity on phones out of total 38. However, 4(10.52%) stated that they use their devices for different purposes other than listed in the questionnaire.

Table 3. Mobile Phone use by Respondents

Item No.	Purpose of Mobile device usage	Frequency	Not responded	Total
1.	Phone communication	38(100%)	0(0.00%)	38 (100%)
2.	Sending and receiving email	28(73.64%)	10(26.32%)	38 (100%)
3.	Sending and receiving text messages	32(84.21%)	6(15.79%)	38 (100%)
4.	Scheduling appointments or tasks	20(52.63%)	18(47.37%)	38 (100%)
5.	Banking	20(52.63%)	18(47.37%)	38 (100%)
6.	Watching videos	32(84.21%)	6(15.79%)	38 (100%)
7.	Listening audio clips	26(68.42%)	12(31.58%)	38 (100%)
8.	Shopping	21(55.26%)	17(44.74%)	38 (100%)
9.	Library	32(84.21%)	6(15.79%)	38 (100%)
10.	Networking on social media (Facebook, Twitter, LinkedIn)	19(50%)	19(50%)	38 (100%)
11.	Playing non-academic interactive games	29(76.31%)	9(23.68%)	38 (100%)
12.	Reading documents	30(78.95%)	8(21.05%)	38 (100%)
13.	No personal activity on phone	13(34.21%)	25(65.79%)	38 (100%)
14.	Others	4(10.52%)	34(89.47%)	38 (100%)

5. CONCLUSION

The paper looked at the level of the use of mobile phone in an institution of higher learning in developing countries. The study findings suggest that almost every student in the surveyed sample is in possession of the Internet connected mobile device. The research examined the use of cell phone by undergraduate students from Kampala University that will enable to gain insights to inform the design of an appropriate ICT solutions for emerging economies. The study can also provide help to researchers and managers of higher learning who would seek to replace PC-based learning with mobile interventions. This paper focused on how students made use of the mobile Internet connected phones in the absence of PCs. Similar studies provide early indications of patterns that will demand for further research in the area as they become more pervasive.

The future researchers should focus on mobile learning that could play a significant role to provide opportunity of accessing higher education to those who live in remote areas [21]. The research findings could be used by mobile phone manufacturers, researchers investigating mobile learning adoption and usage in developing country such as Uganda.

The research results could work as a foundation for the researchers who are interested to research on as why academics in emerging economies are not integrating mobile technology in their teaching, which could be one area for further research [19].

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