ASSESSMENT OF THE PERCEIVED USEFULNESS OF MOBILE PHONE TECHNOLOGY FOR COMMUNICATION IN LEARNING BY DISTANCE EDUCATION STUDENTS IN A RURAL-BASED UNIVERSITY

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ABSTRACT

The study sought to establish distance education students' perceived usefulness of mobile phone technology for communication in learning. Furthermore, the study hypothesised an association between the respondents' biographical details and their perceived usefulness of mobile phone technology for communication in learning. The study was located within the positivist research paradigm, followed a quantitative research approach, and utilised a descriptive research strategy. The Technology Acceptance Model by Davis (1989) and the Community of Inquiry framework by Garrison (2009) informed the study. A stratified random sample of 337 distance education students responded to an online-administered structured questionnaire. Important ethical issues such as informed content, anonymity and confidentiality, as well as ethical clearance and informed consent were considered. Data were analysed statistically, with the aid of the SPSS version 25 software. Statistical data were presented in form of percentages and means. The chi-square test was utilised to respond to the hypotheses. The study found that the respondents affirmed that mobile phone technology was useful for communication in learning, as it allowed students to use text messages, calls, WhatsApp instant messages, emails, and notifications to enhance learning experiences. The study concludes that mobile phone technology has become an integral component of the learning process in distance education. Students were aware of the usefulness of mobile technology for learning, and were prepared to use the technology for flexible, anytime and anywhere learning. The study also found that there was no significant relationship between age, gender, programme and level of study; and the perceived usefulness of mobile phone technology for communication in learning. Given the findings, recommendations are made to formalise the integration of mobile phone technology in distance learning, by making smartphones and internet connectivity available for course instructors and tutors. Furthermore, course instructors and students should be developed and supported to derive maximum benefits from mobile phone utilisation for learning.

Keywords: Distance learning. Online learning. Mobile learning. Mobile phone technology. Communication.

INTRODUCTION

The University of Eswatini (UNESWA) is rural-based in the Kingdom of Eswatini. It is a dual-mode university which offers programmes through the full-time and distance education delivery mode. There are policy imperatives for the implementation of online learning at the University of Eswatini captured in the UNESWA teaching and learning policy, as well as the blended learning policy. The impact of the Covid-19 pandemic has also forced the university to offer academic

programmes online using the Moodle Learning Management system. The UNESWA Teaching and Learning policy notes the importance of the utilisation of available Information Communication Technologies (ICTs) for teaching and learning. There is no definite policy direction on mobile learning, yet the majority of the students own mobile devices (Mthethwa-Kunene & Maphosa, 2020).

The use of mobile phones for learning in higher education has become pervasive and transformative (Ahmad, 2020; Alhasanat, 2020; Tuncay, 2016). The current generation of Open and Distance Learning, which emphasises online learning through the utilisation of different mobile technologies, learning platforms and Web 2.0 tools; has witnessed extensive utilisation of mobile phone technology for learning (Pereira, Durão & Ferreira, 2018; Ahmad, 2020; Anderson & Dron, 2011). In line with the connectivity theory of learning, learning entails building networks of information, contacts and resources that are applied to real problems (Siemens, 2005). In building the networks of information, the students require electronic devices with internet connectivity. Electronic devices would make it possible for students to access information on the Internet.

Abidin and Tho (2018:66) state that one of the benefits of the utilisation of mobile devices in learning is students' ability to share knowledge and information by overcoming the restrictions of time and space. The course instructors can share knowledge and information with students. Students are also able to share knowledge and information among themselves. Information and knowledge related to the course studied can be shared at any given time and any given place. Sharing information and knowledge is a very important aspect of the learning process because learning is based on course content. Course instructors should access the course content without restrictions. Grant et al. (2015) observe that mobile technology has made living synonymous with learning, as students can access information where and when required.

The global environment and the knowledge economy require higher education graduates to exhibit high levels of communication skills using online technologies (Bharathi, 2016). Communication is one of the important 21st-century skills and students should be able to listen and communicate their thoughts. Yang, Li and Hua (2012) note that when students are actively involved in an online discussion as part of the learning strategy, they will learn how to communicate their thoughts to others, respond to others and the 'netiquette' associated with dealing with others online. These are important lifelong skills required in the knowledge economy. However, there is a contrary view by Geertsema, Hyman and van Deventer (2011), that overreliance on text messages, which are often written in informal and truncated language format, may negatively affect the development of formal language and formal ways of communication. Therefore, in formal academic activities such as online discussion forums, students should be encouraged to use formal language. Abidin and Tho (2018) underscore the importance of mobile learning in developing lifelong communication skills.

Mobile devices are important for students to build networks of contacts. The students' contacts could include fellow students and course instructors. As noted by Ozuorcun and Tabak (2012), mobile devices, such as smartphones are easy to carry around, and contain many applications, which make it possible for learning experiences to be transmitted between students and course instructors, and among students. Students are also able to use their mobile phones to call the

distance education provider for assistance, and the assistance can range from student support to academic services (Adria & Woudstra, 2001). Similarly, Hitch and MacBrayne (2003) note that distance education institutions may make use of call centres where students can utilise toll free to access instructional support and other support services. This is possible when students possess mobile phones for the purpose.

Using mobile phones, students can make use of text messaging for educational purposes. Kuznekoff and Titsworth (2013) state that students can send text messages to course instructors or their peers, seeking clarification on certain concepts or issues related to their studies. The possibility of keeping the lines of communication open for educational purposes is very important for enhanced learning. In the same vein, John-Harmen, Ahmed and Laurent (2010) note the importance of communication in learning, and posit that, with opportunities to exchange text messages cost-effectively, students are able to learn well. Mobile phones, therefore, are important accessories for communication between students and course instructors, and also among the students.

Students can also form online communities through participating in social media platforms such as WhatsApp, and are able to exchange important educational information. Barhoumi (2015: 222) states that WhatsApp is "an instant messaging application for smartphones which allows users to exchange images, videos, and audio or written messages using their Internet connection." Communication for educational purposes is enhanced through the sending of video, audio or written messages from student to student, as well as from student to the lecturer. The use of WhatsApp messages is generally cheaper compared to other types of text messages, and the facility is able to send bulk messages. Barhoumi (2015) further notes that through WhatsApp, students stay connected to their schoolwork. This is particularly important for distance learners who may not have face-to-face contact with their course instructors.

As noted by Ferreira-Meyers and Martins (2020), students using their mobile phones may be organised or organise themselves into WhatsApp groups. The existence of such groups makes communication and dissemination of information for academic purposes easier. Students are also able to learn to work together in the online communities formalised through the WhatsApp groups. This fosters interactivity and collaboration, which are important components of distance online learning. The importance of mobile phone technology for learning is therefore, apparent, as it is an important tool for communication.

Students who possess smartphones with internet connectivity are able to use emails for learning. As observed by Yu and Yu (2002), an email system is a powerful learning tool as students are able to communicate with their lecturers using emails. Similarly, Joshi and Saxena (2005) note that through the use of emails, communication in the learning process is enhanced, as students can ask questions to the course instructors and receive responses. Email responses provided by the course instructors will be detailed as the instructors may even add attachments to their responses to students. Joshi and Saxena (2005) further state that, in terms of enhancing communication, emails transcend the city, country and continental borders, making it an ideal and cost-effective means of communication for distance learners.

THEORETICAL FRAMEWORK

The Technology Acceptance Model (TAM) by Davis (1989) served as the theoretical framework to underpin the study. The main tenets of the TAM model

are that, the perceived ease of use and perceived usefulness are the unimportant factors influencing; one's attitudes about new technology, the behavioural intention to adopt and use the technology, as well as the actual use of the technology (Zhu, Lin & Hsu, 2012). Similarly, according to Huang, Lin and Chuang (2007), the perceived usefulness and perceived ease of use are two important factors for the adoption of mobile technology. It was important, in the context of the present study, to establish students at the University of Eswatini's perceived the usefulness and ease of use of mobile-phone technology in enhancing communication in learning, and how such perceptions influenced their attitude, intention to use and actual use of the technology. The establishment of such views is important in ascertaining the students' and institution's preparedness for mobile learning. Zhu, Lin, and Hsu (2012) demonstrated the determinant of behavioural intention to use mobile learning, by using the TAM. Al-Ammary, Al-Sherooqi, and Al-Sherooqi (2014) showed that Perceived Mobility Value and Perceived Ease to Use positively affect Perceived Usefulness, while Perceived Usefulness positively affects Behavioural Intention.

The study is also informed by the Community of Inquiry (CoI) framework by Garrison (2009). As noted by Garrison (2009), the Community of Inquiry theoretical framework shows the creation and development of deep and meaningful online learning, based on collaborative and constructivist principles. Meaningful online learning experiences, according to the Community of Inquiry framework, hinge on the interdependence of three 'presences', namely; the social, cognitive and teaching presence. Mobile phone technology can promote and enhance the students' social presence in learning. Garrison (2009) defines social presence in the CoL framework as the ability of the students to identify and interact with other students, as they form an online learning community. Such a learning community is only possible when students communicate meaningfully with others in a trusting environment, and in the process develop interpersonal skills (Garrison, 2009).

RESEARCH QUESTION

What is the perceived usefulness of mobile-phone technology for communication in learning by distance education students at the University of Eswatini?

Hypotheses

Ho_1: There is no significant relationship between the students' gender and the perceived usefulness of mobile-phone technology for communication in learning, by distance education students.

Ho_2: There is no significant relationship between the students' age and the perceived usefulness of mobile-phone technology for communication in learning, by the distance the education students.

Ho_3: There is no significant relationship between the students' programme of study and the perceived usefulness of mobile-phone technology for communication in learning, by distance education students.

Ho_4: There is no significant relationship between the students' grade level of study and the perceived usefulness of mobile-phone technology for communication in learning, by distance education students.

RESEARCH OBJECTIVES

The study sought to achieve the following research objectives;

1. To establish the students' views on the perceived usefulness of mobile

phone technology in communication in learning.
2. To ascertain if there was any significant relationship between the respondents' age and the perceived usefulness of mobile phone technology for communication in learning.
3. To establish if there was any significant relationship between the respondents' gender and the perceived usefulness of mobile phone technology for communication in learning.
4. To examine if there was any significant relationship between the respondents' programme of study and the perceived usefulness of mobile phone technology for communication in learning.
5. To ascertain if there was any significant relationship between the respondents' level of study and the perceived usefulness of mobile phone technology for communication in learning.

MATERIALS AND METHODS

The study was located within the positivist research paradigm. Epistemologically, positivism is informed by the scientific method which holds the view that knowledge is about observable and measurable facts (Wilson, 2010). Ontologically, positivism advances the view that reality exists out there, independent of the researcher; and that there is one true reality (Rahman, 2017). The study followed a quantitative research approach. Quantitative research entails a systematic study of phenomena by gathering quantifiable data and performing statistical, mathematical, or computational techniques (Muijs, 2010). In this study, quantifiable data on students' views on the perceived usefulness of mobile phone technology in enhancing communication in learning were collected and presented statistically. A descriptive research strategy was employed. In this study, focus was on establishing, descriptively, the respondents' views on the perceived usefulness of mobile phone technology for communication in learning. The questionnaire contained two content sections. The first section required the biographical details of the respondent such as age, gender, programme and level of study. The questionnaire items were derived from the review of literature which suggested several areas in which mobile phone technology was useful for communication in learning. The questionnaire items included, among others, the use of text messages, calls and emails for communication for academic purposes.

A stratified random sample of 337 students was selected for the study. There were twelve academic programmes in the Institute with varying number of students. The programmes, levels of study and gender constituted the strata. From each programme, 20% of the students were selected to be part of the sample through a systematic process. Alphabetical lists for all enrolled students per programme of study, level of study and gender were obtained from Programme Coordinators. Within each programme list, simple random sampling was employed, using the random number table to come up with the required number of students per programme, level and gender. This method ensured representation of all programmes, gender and levels of study. Stratification was done by gender, programme of study, and level of study. The characteristics of the sample included gender, programme, and level of study. The strata included male and female, the different undergraduate programmes, and diverse levels. The groups comprised male and female students in each programme and at each level of study. The proportionate stratification sampling procedure was utilised, where the sample size of each stratum was proportionate to the population size of the stratum. The

targeted proportionate sample size was 20% of the population of the sample size. This was far above the 10% threshold suggested by Ankrah (2014). Given the likelihood of a lower return rate in the online-administered questionnaire (Silva & Durante, 2014), the 20% sample size enabled the researcher to meet the minimum 10% threshold as noted by Faber and Fonseca (2014), the sample size should not be lower than the ideal.

A highly structured questionnaire was administrated online through Google Forms, and 287 responses were gathered; constituting an 85% return rate. The researcher administered the questionnaire online through Google Forms. Nayak and Narayan (2019) state that electronically administered questionnaires make sending and responding easy and cost-effective. The researcher selected email addresses of the required sample size per programme, sent a link to the questionnaire to the respondents' email addresses, and the respondents anonymously completed the questionnaire online. The respondents confirmed consent by clicking 'Yes' to the consent statement before proceeding to complete the form. Google Forms allows the researcher to create a survey and to invite the respondents to complete the survey via email. The Google Forms 'limit to one response' setting was, to ensure that each student responded only once. Of importance here was the issue of researcher detachment, which guaranteed neutrality and reduced personal bias in the data collection process (Savela, 2018). Respondents were able to use any browser and had the flexibility of utilising browsers on their mobile devices to respond to the questionnaire. Furthermore, the Google Form 'Collect email addresses' function was deactivated to ensure anonymity. The respondents were not required to write their email addresses or names anywhere in the form. Therefore, the responses could not be traced to the individual students. The respondents were required to answer the items on a 4-point rating scale, ranging from 4 to 1 as follows: Strongly Agree (SA) is 4 points, Agree (A) is 3 points, Disagree D is 2 points, and Strongly Disagree (SD) is 1 point. The respondents were also required to tick against the options that reflected their opinions about the perceived usefulness of mobile-phone technology for communication in learning by distance education students at the University of Eswatini. Google Forms was electronically set to accept responses for three weeks, and the setting was disabled thereafter, to begin data analysis.

The Cronbach alpha coefficient was calculated to ensure the internal reliability of the instrument. The SPSS software was used to compute alpha values for the different sections. The values for the sections were above 0.7 and considered above the required threshold for internal reliability. The instrument was also piloted to ensure content and face validity. Through the assistance of the SPSS version 25, data were analysed statistically and reported through descriptive statistics. The following decision rule was applied;

If the mean score is 2.50 and above it was accepted as representing 'Strongly Agree' or 'agree'. The mean would be interpreted to mean that the item was considered useful for communication in learning. While any item with a mean score less than 2.50 were not accepted as they represented 'Strongly disagree' or 'disagree' and the mean interpreted to mean that the item was not considered useful for communication in learning.

Ethical Issues

All ethical issues such as research permission, ethical clearance and informed consent were attended to in the study. The issue of ethics is important in research. According to Simelane-Mnisi (2018), ethics in research revolve around the researcher's moral responsibility in the treatment of research participants.

Furthermore, Banks et al. (2013) state that it is standard practice that any research endeavour which includes human participants or animals should obtain clearance and approval by an institutional ethical review committee before it is conducted. The clearance and approval are hinged on the protection of participants in the research process. Ethics in research is concerned about what is morally good in the conduct of the research. The researcher attended to several ethical issues discussed next.

Research permission

The researcher obtained ethical clearance from UNISA College of Education Ethics Review Committee before collecting data. The researcher also sought explicit permission from the UNESWA management to conduct a study on the IDE students. The Permission was granted.

Informed consent

Informed consent in the current study was sought at two levels. The researcher designed an informed consent form, which was provided to the respondents. The respondents signed to accede to participating in the study with no conditions tied to their participation. Since data were collected electronically through a Google Forms questionnaire, a consent section was included on the electronic questionnaire. The first section of the Google Forms described the study and its purpose. The section also informed respondents that participation was voluntary, and further assured them of confidentiality and anonymity. After reading the consent statement, the respondents were asked to click 'Yes' to confirm consent and then proceed to fill out the form. Any respondent who clicked 'No' was deemed to have declined consent and the system automatically denied them further access to completing the form. Therefore, only respondents with positive confirmation to participate proceeded to complete the questionnaire, and their responses were captured for analysis.

Anonymity and confidentiality

The researcher undertook to protect the identity of the respondents to the questionnaire. In the current study, the questionnaire was administered online through Google Forms. The respondents were requested to respond anonymously and their responses were treated with strict confidentiality. Furthermore, the Google Forms 'Collect email addresses' function was deactivated to ensure the anonymity of the respondents. The respondents were not required to write their email addresses or names anywhere in the form. Hence, the responses could not be traced to individual students.

Voluntary participation and withdrawal

Respondents participated in the study freely, without coercion. As research participants accede to participate in a study, it has to be clear that they do so voluntarily and will be free to withdraw from the study at any stage and for any reason. As already alluded to, in the present study, consent was sought at two levels, and on both levels, it was explicitly stated that participation was voluntary and that the respondents to the questionnaire were free to withdraw from the study at any stage, and for whatever reason.

Harm

Harm entails any form of discomfort which may include physical or emotional harm. The current study was on the students' views on the perceived usefulness of mobile phone technology for communication in learning. The nature and content of the study did not expose the respondents to any harm. The process of collecting data through an online administered questionnaire did not cause any form of harm to the respondents,

directly or indirectly

RESULTS

In this section, the results of the study are presented, starting with the biographical details of the respondents. Table 1 presents the biographical details of the respondents.

Table 1: Distribution of the biographical characteristics of the respondents (N=287)

Biographical variable	**Variable description**	**Frequency**	**Percentage%**
Gender	Male	107	37.3
	Female	180	62.7
Total		**287**	**100**
Age	18 - 22	44	15.3
	23 - 27	47	16.4
	28 - 32	64	22.3
	33 - 37	69	24.0
	38 and above	63	22.0
Total		**287**	**100**
Programme of Study	Bachelor of Arts (Humanities)	22	7.7
	Bachelor of Education (Adult Education)	9	3.1
	Bachelor of Education (Primary)	17	5.9
	Bachelor of Education (Secondary)	71	24.7
	Bachelor of Laws	19	6.6
	Diploma in Law	11	3.8
	Bachelor of Commerce	53	18.5
	Bachelor of Nursing Science	15	5.2
	Bachelor of Science (Information Technology)	22	7.7
	Postgraduate Certificate in Education	17	6.0
	Certificate in Portuguese	0	0
	Certificate in Psychosocial Support	31	10.8
Total		**287**	**100**
Level of Study	1st year	97	33.8
	2nd year	57	19.8
	3rd year	39	13.6
	4th year	94	32.8
Total		**287**	**100**

On the issue of gender the majority of the respondents 62.7% (n=180) were female and 37.3 (n=107) we male. The gender disparity in the responses was consistent with the population and sample numbers in the frames, discussed in the Materials and Methods section. The highest number of respondents was from the 33 – 37 age group, 24% (n=64) and the lowest was from the 18 – 22 age group, 15.3%

(n=44). This distribution in terms of age confirms the long-held view of ODL being for mature working adults. It is also important to note the presence of young people in ODL programmes.

On the programme of study, the majority of the respondents were from the Bachelor of Education (Secondary) 24.7% (n=71), followed by the Bachelor of Commerce 18.5% (n=53) and the Certificate in Psychosocial Support 10.8% (n=31). There was no respondent from the Certificate in Portuguese programme, but there was 3.1% (n = 9) from the Bachelor of Education (Adult Education) programme, and 3.8% (n=11) from the Diploma in Law programme. The number of respondents to the questionnaire is consistent with the stratified random sampling employed in the study. The programmes with the largest number of students yielded more responses than the programmes with fewer numbers. The majority of the respondents were in the first year group 33.8% (n=97) and the lowest was in the third year group.

Results on the perceived usefulness of mobile phone technology for

communication in learning

In this section, the results of the respondents' views on the usefulness of mobile phone technology in communication are presented. There were ten-question items on communication that sought to establish the respondents' views on how they perceived the usefulness of mobile phone technology in the communication aspect of their learning. The results are summarised in Table 2

Table 2: Responses on the perceived usefulness of mobile phone technology for communication in learning (N=287)

Communication	SA	A	D	SD	T	M	ST.D	Remarks
I am able to send text messages related to my studies	88 (30.7%)	188 (65.5%)	10 (3.5%)	1 (0.3%)	287 (100%)	3.26	0.54	PU
I am able to receive text messages related to my studies	91 (31.7%)	183 (63.8%)	11 (3.8%)	2 (0.7%)	287 (100%)	3.26	0.56	PU
I am able to respond to text messages related to my studies	89 (31%)	179 (62.4%)	17 (5.9%)	2 (0.7%)	287 (100%)	3.24	0.59	PU
I am able to send voice/ audio messages related to my studies	68 (23.7%)	167 (58.2%)	50 (17.4%)	2 (0.7%)	287 (100%)	3.05	0.66	PU
I am able to receive voice/ audio messages related to my studies	89 (31%)	172 (59.9%)	23 (8%)	3 (1%)	287 (100%)	3.21	0.62	PU
I am able to send emails on issues related to my studies	99 (34.5)	154 (53.7%)	30 (10.5%)	4 (1.4%)	287 (100%)	3.21	0.68	PU
I am able to receive emails on issues related	98 (34.1%)	156 (54.4%)	29 (10.1%)	4 (1.4%)	287 (100%)	3.21	0.67	PU

to my studies on my mobile phone								
I am able to make calls related to my studies	90 (31.4%)	153 (53.3%)	40 (13.9%)	4 (1.4%)	287 (100%)	3.15	0.70	PU
I am able to receive calls related to my studies	89 (31%)	156 (54.4%)	39 (13.6%)	3 (1%)	287 (100%)	3.15	0.68	PU
I am able to receive notifications on issues related to my studies	89 (31%)	160 (56.7%)	34 (11.8%)	4 (1.4%)	287 (100%)	3.16	0.68	PU
Average Mean						**3.2**		**PU**

Key: SA – Strongly Agree; A- Agree; D- Disagree; SD – Strongly Disagree; T – Total; M-Mean; ST.D-Standard Deviation; PU – Perceived Useful; PNU – Perceived Not Useful

On the issue of communication as an aspect of learning by which the students used their mobile phones, the majority of the respondents indicated that the mobile phone technology was useful for different communication aspects related to one's studies such as sending text messages 96.2% (n=276), mean, 3.26; receiving text messages 95.5% (n =274), mean, 3.26; responding to text messages 93.4% (n=268), mean, 3.24; sending voice/ audio messages 81.9% (n=235), mean, 3.05; receiving voice/ audio messages 90.9% (n=261), mean, 3.21; sending emails 88.2% (n=253), mean, 3.21; receiving emails 88.5% (n=254), mean, 3.21; making calls 84.7% (n=243), mean, 3.15; receiving calls 85.4% (n =245), mean, 3,15; as well as receiving notifications 87.7% (n=249), mean, 3.16. The average mean of 3.2 on aspects of communication suggested that the respondents perceived mobile phone technology as a useful aspect of communication in learning.

Results on the hypotheses

The study sought to establish if there was any relationship between the students' gender, age, level of study and programme of study and the perceived usefulness of mobile phone technology for communication in learning. In responding to the research hypothesis, the chi-square test was employed. In calculating the chi-square results, the researcher created a new variable "Overall perceived usefulness" by computing a mean score for each respondent for all 60 items. This computation changed the mean scores to a categorical (nominal) variable by using 2.50 as a threshold (2.50 and below = Perceived Not Useful; above 2.50 = Perceived useful) as explained in the methodology section. The researcher then ran the chi-square tests for the categorical (nominal) variables for gender, age, the programme of study, and level of study, to establish if there was any relationship between gender, age, programme and level of study; and the perceived usefulness of mobile phone technology for learning.

Decision Rule

If the calculated chi-square (p-value) was greater than the level of significance of 0.05 the null hypothesis was retained and if the p-value was equal to or less than the level of significance of 0.05 the hypothesis was rejected.

Table 3: Chi-square results

Biographical variable	**Perceived usefulness of mobile phone technology for learning**				
		Perceived Not Useful	**Perceived Useful**	**Total**	**Chi-square test (x^2)/ Decision**
Gender	Male	7	100	107	(X^2 = 1.172 (1), p = 0.270). p> 0.05 Null Hypothesis is retained
	Female	7	173	180	
	Total	**14**	**273**	**287**	
Age	18 - 22 years	5	39	44	(X^2 = 5.013 (4), p = 0.286). p>0.05 The null hypothesis is retained
	23 – 27 years	1	46	47	
	28 – 32 years	3	61	64	
	33 – 37 years	4	65	69	
	38 and above	1	62	63	
	Total	**14**	**273**	**287**	
Programme of study	Bachelor of Arts (Humanities)	3	19	22	**(**X^2 = 12.911 (10), p = 0.229). p>0.05 Null Hypothesis is retained
	Bachelor of Education (Adult Education)	0	9	9	
	Bachelor of Education (Primary)	1	16	17	
	Bachelor of Education (Secondary)	2	69	71	
	Bachelor of Laws	1	18	19	
	Diploma in Law	2	9	11	
	Bachelor of Commerce	3	50	53	
	Bachelor of Nursing Science	0	15	15	
	Bachelor of Science (Information Technology)	1	21	22	
	Postgraduate Certificate in Education	0	17	17	
	Certificate in Psychosocial Support	1	30	31	
	Total	**14**	**273**	**287**	
Level of Study	Level 1	4	93	**97**	(X^2 = 7.199 (5), p = 0.206). p>0.05 The null hypothesis is retained
	Level 2	2	55	**57**	
	Level 3	5	34	**39**	
	Level 4	3	91	**94**	
	Total	**14**	**273**	**287**	

As shown in Table 2 there was no association found between gender and perceived usefulness (X^2 = 1.172 (1), p = 0.270). The p-value was greater than the chosen p-value = 0.05, hence; the null hypothesis was retained. Table 4.3 also shows that there was no association between students' age and perceived usefulness (X^2 = 5.013 (4), p = 0.286). The p-value was greater than the chosen p-value = 0.05, hence; the null hypothesis was retained. The study further found that there was no association found between students' programme of study and perceived usefulness (X^2 = 12.911 (10), p = 0.229). The p-value was greater than the chosen p-value = 0.05, and the null hypothesis was retained. It was also found that there was no association between students' level of study and perceived usefulness (X^2 = 7.199 (5), p = 0.206). The p-value was greater than the chosen p-value = 0.05, and the null hypothesis was also retained.

DISCUSSION

The study found that mobile phone technology was perceived as useful regarding its role in text messaging in the learning process. Respondents were able to send, receive and respond to text messages related to their studies, by using mobile phone technology. This finding was consistent with views by DuVall, Powell, Hodge and Ellis (2007), who contend that communication is very important in online learning, and that text messaging is a way in which students stay connected by communicating with course instructors and fellow students. Similarly, Kuyath, Mickelson, Saydam and Winter (2013) posit that the use of mobile phone technology allows students to exchange information with near synchronicity through instant messaging. Students are able to send messages and receive immediate responses, which allows them to proceed with their learning.

The finding of the perceived usefulness of mobile phone technology to aid communication for learning through text messaging is also consistent with tenets of the Community of Inquiry framework (Garrison, 2009). Students' social presence in an online learning community is enhanced through communication with others using mobile phone technology. The individual student's identity in an online learning community is defined by the nature of text messages shared with fellow students, and responses made to others. Carnevale (2000: 188) explains social presence as "the feeling one has that the other persons are involved in a communication exchange" and mobile phone technology is the medium that allows communication exchange through text messaging. Furthermore, Kuyath, Mickelson, Saydam and Winter (2013) note that text messages reduce the isolation and lack of interactivity normally associated with online learning. The student's identification with an online learning community results in the development of a sense of belonging, which is important in enriching online learning experiences.

Mobile phone technology was also perceived as useful for communication in learning as it allowed students to make use of the email system. Students were able to send and receive emails related to their studies. This finding corroborates the findings of an earlier study by Tali (2008), which found that students who utilised the electronic mail system by communicating with course instructors felt they had academic support and were satisfied with the teaching and learning process. Barton et al. (2018) similarly note the importance of email as a tool to provide feedback to students.

The study also established that mobile phone technology was deemed useful for communication in learning as

students were able to use their phones to make calls related to learning. The findings support assertions by Holland and Kellog (2020) that phones are important in distance learning as they facilitate the maintenance of lines of communication among students, and between students and course instructors. Holland and Kellog (2020) note that a call by a student to a course instructor assists the latter to have a clear understanding of the former's needs and challenges. Assistance may be offered to the student over the phone, and the student will be able to progress with learning.

On the importance of calls for academic purposes, Kondra, Huber, Michalczuk, and Woudstra (2008) suggest that distance learning institutions should operate with established call centres that are useful vehicles for academic coaching and advising. Students should be able to make use of a toll-free number to a call centre, which will then redirect them to tutors and academic advisors. Such a facility will go a long way towards providing the much-needed academic support for distance learners. In underscoring the importance of call centres in education, Hitch and MacBrayne (2003) cited in Kondra, Huber, Michalczuk, and Woudstra (2008: 368) note that such centres are, not only useful for relaying information to prospective students or conducting surveys, but also for 'instructional services.' This finding is consistent with related findings in literature as Bere and Rambe (2019) note the importance of mobile phone technology in enhancing communication between students and between learners and lecturers. Communication is one of the affordances of mobile phone technology. The affordances of communication through mobile phones such as text messages, calls, emails, as well as audio, video and photo sharing, are well-elaborated in literature (Clark, 2013; Alqahtani & Mohammad, 2015; Grant, 2019; Reeves & Reeves, 2015).

CONCLUSION

The present study sought to establish the perceived usefulness of mobile phone technology for learning, by distance education students in a rural-based university. The study was conducted to ascertain how students perceived the usefulness of mobile technology for communication in learning. The study served as an important fact-finding survey to inform planning for mobile learning using smartphones in the university.

The mean value of more than 2.50 for all responses to the variables captured by the questionnaire items showed that the respondents were generally agreeable on the usefulness of mobile technology for communication in learning. Mobile phone technology was perceived as useful in all aspects of communication in learning. It is, therefore, concluded that mobile phone technology was perceived as useful for communication in learning. It is also important to note that in rural-based environments, students are aware of, and appreciate the role of, mobile phone technology for communication in learning. This awareness and appreciation should be the basis for entrenching mobile learning in rural-based institutions. The hypotheses also revealed that there was no association between age, gender programme and level of study; and perceived usefulness. This suggests that students generally perceived mobile phone technology to be useful for communication in learning.

The main limitation of the study is that it was wholly quantitative and did not capture the reasons behind some of the responses provided on the perceived usefulness of mobile phone technology for communication in learning. A study that brings in a qualitative aspect would have assisted in establishing a holistic picture of the issue under study.

RECOMMENDATIONS

In the light of the findings of the study, the following recommendations are made;

1. Owing to the numerous affordances of mobile phone technology it is recommended that mobile phone technology be made an integral part of distance education.
2. Distance education institutions should leverage students' positive perceptions about the usefulness of mobile phone technology to implement mobile learning.
3. Course instructors should be trained in mobile learning pedagogies to ensure that the benefits of mobile phone technology for communication, as perceived by students, are maximally realised for enhanced learning.
4. Distance education institutions should operate with well-established call centres to enable students use their mobile phones to call for academic and other forms of assistance.
5. The effective utilisation of mobile phone technology for communication in learning depends on the availability of appropriate phones and data. There is therefore, need for institutions to assist students with such provisions, where possible. Students could be assisted by allocating them with data across all networks or by reverse billing for internet connectivity.

REFERENCES

Abidin, N. Z., & Tho, S. (2018). The development of an innovative resonance experiment using smartphones with free mobile software applications for tertiary education. *International Journal of Educational Development*, 14, 164 - 176.

Adria, M. & Woudstra, A. (2001). Who's on the line? Managing student interactions in distance education using a one-window approach. *Open Learning*, 16(3), 249 -261.

Alhasanat, I. K. (2020). Using Smartphones in Learning Arabic by AOU Students. *Higher Education Studies*, 10 (1), 48 – 59.

Al-Ammary, J. H., Al-Sherooqi, A. K. & Al-Sherooqi, H. K. (2014). The acceptance of social networking as a learning tool. *International Journal of Information and Education Technology*, 4(2), 208 - 214.

Alqahtani, M. & Mohammad, H. (2015). Mobile applications' impact on student performance and satisfaction. *Turkish Online Journal of Educational Technology*, 14(4), 102 – 112.

Anderson, T. & Dron, J. (2011). Three generations of distance education pedagogy. *The International Review of Research in Open and Distance Learning*, 12(3), 80 - 97.

Ankrah, E. (2014). The impact of information systems strategy on bank performance in Ghana. (Unpublished Doctoral Thesis). Department of Information Studies, University of Ghana.

Banks, S., Armstrong, A., Carter, K., Graham, H., Hayward, P., Henry, A., Holland, T., Holmes, C., Lee, A., McNulty, A., Moore, N., Nayling, N., Stokoe, A. & Strachan, A. (2013). Everyday ethics in community-based participatory research. *Contemporary Social Science*, 8(3), 263 – 277.

Barhoumi, C. (2015). The Effectiveness of WhatsApp Mobile Learning

Activities Guided by Activity Theory on Students' Knowledge Management. *Contemporary Educational Technology*, 6(3), 221 – 238.

Barton, E. E., Pokorski, E. A., Gossett, S., Sweeney, E., Qiu, J. & Choi, G. (2018). The Use of Email to Coach Early Childhood Teachers. *Journal of Early Intervention*, 40 (3), 212 - 228.

Bere, A. & Rambe, P. (2019). Understanding mobile learning using a social embeddedness approach: A case of instant messaging. *International Journal of Education and Development using Information and Communication Technology*, 15, 132 – 153.

Carnevale, D. (2000). Study Assesses What Participants Look for in High-Quality Online Courses. *Chronicle of Higher Education*, 47(9), A46 - A46.

Clark, B. (2013). Cellular Phones as a primary communications device: What are the implications for a global community? *Global Media Journal*, Fall, 1 - 12.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology, *MIS Quarterly*, 13(3), 319 - 340.

DuVall, J. B., Powell, M. R., Hodge, E. & Ellis, M. (2007). Text messaging to improve social presence in online learning. *Educause Quarterly*, 3, 24 - 28.

Faber, J. & Fonseca, L. M. (2014). How sample size influences research outcomes. *Dental Press Journal of Orthodontics*, 19(4), 27 - 29.

Ferreira-Meyers, K. & Martins, J. (2020). The use of Whatsapp in today's mobile language teaching and learning. *ITM Web of Conferences* 33, 1 - 6.

Garrison, D. R. (2009). *Communities of Inquiry in Online Learning*. New York: IGI Global.

Geertsema, S., Hyman, C. & van Deventer, V. (2011). Short message service (SMS) language and written language skills: educators' perspectives. *South African Journal of Education*, 31, 475 - 487.

Grant, M. M. (2019). Difficulties in defining mobile learning: analysis, design characteristics, and implications. *Educational Technology Research and Development*, 67, 361 - 388.

Hitch, L. P. & MacBrayne, P. (2003). A model for effectively supporting e-learning. Retrieved October 23, 2003, from http://ts.mivu.org/default.asp?show=article&id=1016. Accessed 20 March 2021.

Holland, B. & Kellog, N. (2020). How Phones Can Facilitate Distance Learning. https://www.edutopia.org/article/how-phones-can-facilitate-distance-learning. Accessed 20 April 2021.

Huang, J. H., Lin, Y. R. & Chuang, S. T. (2007). Elucidating user behaviour of mobile learning (a perspective of the extended technology acceptance model). *The Electronic Library*, 25(5), 585 - 598.

John-Harmen V., Ahmed T. R. & Laurent, E. (2010). Using Mobile Phones to Improve Educational Outcomes: An Analysis of Evidence from Asia. *International Review of Research in*

Open and Distance Learning, 11(1), 117 - 140.

Joshi, V. & Saxena, A. (2005). Analyzing E-mail Communication of Prospective Learners. *Turkish Online Journal of Distance Education–TOJDE*, 6(4), 32 - 41.

Kondra, A. Z., Huber,C., Michalczuk, K. & Woudstra, A. (2008). Call Centers in Distance Education. In T. Anderson, *Theory and Practice of Online Learning* (pp 295 – 317) AU Press, Athabasca University.

Kuyath, S. J., Mickelson, R. A., Saydam, C. & Winter, S. J. (2013). The Effects of Instant Messaging on Distance Learning Outcomes. *International Journal of Business, Humanities and Technology*, 3(2), 13 - 26.

Kuznekoff, J. H & Titsworth, S. (2013). The Impact of Mobile Phone Usage on Student Learning, *Communication Education*, 62(3), 233 - 252.

Mthethwa-Kunene, K. E. & Maphosa, C. (2020). An Analysis of Factors Affecting Utilisation of Moodle Learning Management System by Open and Distance Learning Students at the University of Eswatini, *American Journal of Social Sciences and Humanities*, 5(1), 17 - 32.

Muijs, D. (2010). *Doing quantitative research in education with SPSS*. London: Sage.

Nayak, M. S. D. P. & Narayan, K. A. (2019). Strengths and Weakness of Online Surveys. *Journal of Humanities and Social Science*, 24(5), 31 - 38.

Ozuorcun, N. C. & Tabak, F. (2012). Is M-learning versus E-learning or are they supporting each other? *Procedia - Social and Behavioral Sciences*, 46, 299 - 305

Rahman, M. S. (2017). The advantages and disadvantages of using qualitative and quantitative approaches and methods in language" testing and assessment" research: A Literature Review. *Journal of Education and Learning*, 6(1), 102 - 112.

Reeves, T. C. & Reeves, P. M. (2015). Reorienting educational technology research from things to problems. *Learning: Research and Practice*, 1(1), 91 - 93.

Savela, T. (2018). The advantages and disadvantages of quantitative methods in schoolscape research. *Linguistics and Education*, 44, 31 - 44.

Siemens, G. (2005). Connectivism: A learning theory for the digital age. International Journal of Instructional Technology and Distance Learning, 2(1). Retrieved from http://www.itdl.org/. Accessed 20 February 2021.

Silva, S. C., & Durante, P. (2014). Suggestions for international research using electronic surveys. *The Marketing Review*, 14(3), 297-309.

Simelane-Mnisi, S. (2018). Role and Importance of Ethics in Research. In Ensuring Research Integrity and the Ethical Management of Data (p 1 – 13).

Tali, H. (2008). The Effects of E-Mail Messages in a Distance Learning University on Perceived Academic and Social Support, Academic Satisfaction, and Coping. Quarterly Review of Distance Education, 9(3), 237 - 248.

Tuncay, N. (2016). Smartphones as tools for distance education. Journal of

Educational and Instructional Studies in the World, 6(2), 2146- 2163.

Wilson, J. (2010). Essentials of Business Research: A Guide to Doing Your Research Project London: SAGE Publications.

Yu, F. Y. & Yu, H. J. (2002). Incorporating e-mail into the learning process: its impact on student academic achievement and attitudes. Computers and Education, 38, 117-126.

Zhu, D. S., Lin, C. T. & Hsu, Y. C. (2012). Using the technology acceptance model to evaluate user attitude and intention of use for online games. *Total Quality Management*, 23(7-8), 965 - 980.