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Research Article

Student Acceptance of Whatsapp Social Media for Teaching and Learning – Case Study of One of Rural Universities in South Africa

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Abstract. This study explores the potential of WhatsApp as an effective knowledge-sharing platform in educational settings, focusing on students' perceptions. This study aims to evaluate WhatsApp acceptance through the UTAUT model by showing the contributing variables to the acceptance of WhatsApp in an undergraduate program at Walter Sisulu University, South Africa. This study was an ex post facto study with 120 samples distributed proportionally. The data were collected through a questionnaire that was developed from UTAUT model variables and based on the hypothesis test showed that facilitating conditions, behavioural intention, effort expectancy, performance expectancy, and social influence significantly and positively affected behavioural intention. Facilitating conditions

and behavioural intention significantly and positively affected WhatsApp acceptance. Variables that greatly contributed to higher WhatsApp acceptance were facilitating conditions and behavioural intention. Facilitating conditions were strongly affected by the student knowledge and university assistance in assisting students to download the applications. Meanwhile, the behavioural intention was strongly influenced by the level of student's belief in WhatsApp and students' eagerness for WhatsApp to be integrated with their studies. Nevertheless, social influence variables and behavioural intention were also strongly affected by students' use the WhatsApp for learning.

Keywords: UTAUT model, WhatsApp acceptance, undergraduate program, social media

INTRODUCTION

The current rapid change and incredible development in Information Communication Technologies (ICT) have affected people's ways of living (Mabeifan & Heukelman, 2018; M Mbodila, Marongwe, & Kwahene, 2020). These technologies have provided effective ways of interactions, ideas sharing and information between people etc., (Mabeifan & Heukelman, 2018; M Mbodila et al., 2020). Social media platforms are one of the typical examples of technology that people use to communicate, interact, collaborate and share knowledge (Munienge, Ndebele, & Muhandji, 2014). These social media include Instagram, Myspace, Facebook, Twitter, Instagram, WhatsApp etc. However, the effectiveness of these tools has made many people, organizations, and businesses, with no exception of educational systems make use of these technologies to share information and resources in the form of messaging, voice, images, videos and many more (Cetinkaya, 2017).

In this technological age, many learning institutions are trying to infuse the use of social media technologies tools in teaching and learning to communicate and share knowledge and information with students since there is high demand by most modern learners to study anywhere at any time they wish (Cetinkaya, 2017). The advantages exhibited by using social media such as synchronous chat, transparency and collaboration that certain Mobile Instant Messaging (MIM) services offered when compared with other electronic platforms such as emails, have significantly increased the way people interact and the use of social media platforms (M. Mbodila & Esan, 2020). There are many social media tools available for teaching and learning such as Facebook, Twitter, Instagram, WhatsApp, Telegram, and many others. But amongst them, the most preferable that many students in higher institutions of learning normally use for communication, and sharing of content and information is WhatsApp, this might be due to its efficient instant messaging service, fast transmission time and low cost of usage (M. Mbodila, 2023).

The term WhatsApp is derived from the English phrase "What's up", which means what is new? This is an instant messaging application for smartphones. It enables users to share pictures, videos, and audio or written messages using their Internet connection on the cell phone (Soria, Plana, & Frumuselu, 2020). The research conducted by (Barhoumi, 2015) explores the effectiveness of social media such as WhatsApp for mobile teaching and learning of information science. The author suggested the use of WhatsApp mobile applications by teachers to pursue learning

activities in blended courses. (Reeves, Alkhalaf, & Amasha, 2019) proposed that current higher institution students need collaborative learning activities to construct and share knowledge as well as improve their communication skills. Several researchers have proved that mobile learning provides students with unlimited opportunities to achieve their learning goals through learning situations in real-time and authentic interaction that makes learning meaningful, effective, and different from those decontextualized traditional classrooms (Kim, Lee, & Kim, 2014). This is supported by the research of (Munienge et al., 2014) who discussed the benefits of using social media platforms with their regular uses such as sending text messages, surfing the net and using diverse applications, students and teachers have more opportunities to foster learning and make studying more meaningful. This has made the use of social media as part of e-learning and mobile tools for teaching and learning to be of paramount importance in this new technological age.

Several researchers have attempted the applicability of WhatsApp in modern-day teaching and learning (La Hanis, Risdiany, Dwi Utami, & Sulisworo, 2018). The research work by (Boyinbode, Agboniso, & Ogundare, 2017) claimed that apart from using WhatsApp for socializing, it can also be used for studying computer science-related courses. Furthermore, the research by (Guo, France, & Cowley, 2020) investigated the effectiveness of social media WhatsApp in enhancing the postgraduate student experience. The authors conducted a qualitative experimental approach on twelve postgraduate management students at a United Kingdom (UK) university in 2018. The results obtained show that WhatsApp does provide several benefits and opportunities for collaborative learning among postgraduate students. The research in (Robles, Guerrero, Llinas, & Montero, 2019) conducted online teacher-student interaction using WhatsApp in a law course from a higher education institution in Colombia. The authors used a mixed method which requires the participants (students) to complete an opinion survey to establish students' satisfaction towards the use of WhatsApp to complement face-to-face classes and to explore the in-depth of students' opinion and acceptance of the WhatsApp tool for academic purposes. This is supported by the research done in (Ujakpa, Heukelman, Lazarus, Neiss, & Rukanda, 2018) which shows that the use of WhatsApp to support communication in teaching and learning in small university.

However, some educators and academics argued on the negative effects of using social media platforms for educational purposes. For instance, the inability to access some of the educational parameters in some academic fields of studies such as mathematical and physics parameters etc., might hinder the use of the platform for teaching. From some educators' perspectives, some lecturers believe that utilizing social media platforms for teaching and lecturing purposes can cause distractions, noise, cyberbullying, and assessment malpractices in their lecture halls. Many university students have found these social media platforms to be the perfect allies for carrying out academic activities due to their ubiquity, convenience, and affordances (Al-Mukhaini, Al-Qayoudhi, & Al-Badi, 2014; Olufadi, 2015; Terras & Ramsay, 2012). The presence of positive and negative sides of social platforms does not change the fact that these tools are rapidly gaining popularity in the educational system.

Given this, the importance of this study is to explore the students' perceptions of WhatsApp social media, which is a technology tool for communication and knowledge sharing tool that could assist in the facilitation of teaching and learning in higher institutions of learning. Hence, this study employs a learning theory based on constructivism theory which is the framework concepts that describe how information is absorbed, processed, and assimilated during learning (Boyinbode et al., 2017).

From the literature review, there is evidence that there is less research activity on the application of WhatsApp for learning, but what is most common is that the higher institution of learning students are using the media for social interaction (M. Mbodila, 2023). The study, therefore, sought to understand factors that can influence the adoption of this platform for learning among private and public university students in Nigeria. Information from the study would in no small measure assist policymakers and university teachers in the effective use of platforms as emerging learning tools in higher education.

THEORETICAL FRAMEWORK

The study aimed to explore the factors that might affect the behavioural intention of students' adoption of WhatsApp as a social media platform for learning. To investigate these factors, the study applied the information technology acceptance theory developed by (Venkatesh, Moriss, Davis, & Davis, 2003). To support this analysis, the conceptual framework shown in Figure 1 was utilized and adapted accordingly.

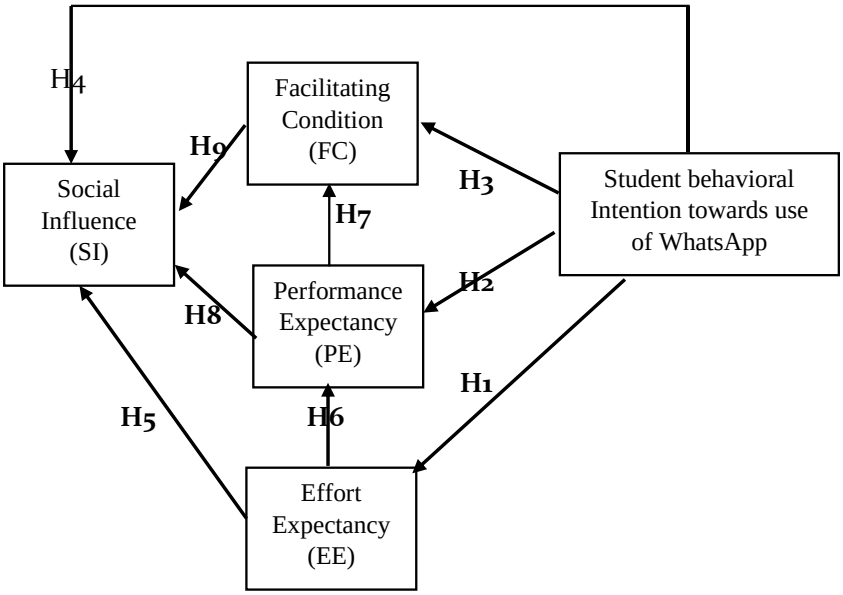

Figure 1: Theoretical framework of the study as adapted from (Venkatesh et al., 2003).

Unified Theory of Acceptance and Use of Technology

The unified theory of acceptance and use of technology (UTAUT) was introduced by (Venkatesh et al., 2003) to identify factors influencing the acceptance

of new information technologies in organizational settings. In developing this model, (Venkatesh et al., 2003) reviewed and compared multiple existing models of technology acceptance. These included the theory of reasoned action (TRA) (Sheppard, Hartwick, & Warsaw, 1988), the technology acceptance model (TAM) (Davis, 1989), the theory of planned behaviour (TPB) (Ajzen, 1991), the combined TPB/TAM model (Taylor & Todd, 1995), and the innovation diffusion theory (IDT) (Rogers, 2003), among others. Through a systematic analysis of these theories in psychology and sociology, (Venkatesh et al., 2003) formulated the UTAUT model, which successfully explained 70% of the variance in users' behavioural intentions toward technology acceptance.

The UTAUT model is regarded as one of the most effective frameworks for understanding and analyzing technology acceptance (Chao, 2019). This model includes six core constructs: performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), behavioural intention (BI), and actual usage or acceptance of a system. According to (Venkatesh et al., 2003), performance expectancy reflects the extent to which a user believes that the system will enhance their task performance. Effort expectancy, on the other hand, reflects the ease or difficulty of using the system. These two constructs, PE and EE, align closely with perceived ease of use (PEOU) and perceived usefulness (PU) in the Technology Acceptance Model (Davis, 1989). Likewise, they share similar meanings with complexity and compatibility from innovation diffusion theory (IDT) (Rogers, 2003), indicating that these constructs are derived from both TAM and IDT.

Social influence (SI) refers to the extent to which an individual perceives that important people in their life believe they should adopt a new technology. Facilitating conditions (FC) indicate the extent to which an individual feels there is adequate technical support and resources to use the technology. Behavioural intention (BI) reflects the likelihood that a user will adopt the system to complete a specific task in the future. This study chose to adopt the UTAUT model because of its strong explanatory power; as noted by (Venkatesh et al., 2003), the model accounts for 70% of the variance in users' behavioural intention to use a particular technology or system. Effort expectancy (EE) reflects university students' beliefs about how easy or challenging it would be to use WhatsApp for learning purposes. Performance expectancy (PE) represents their belief in whether the WhatsApp platform could enhance their learning performance. Based on these constructs, the following hypotheses are proposed for the study.

Hypotheses of the Study

Hypothesis 1: EE would have a significant influence on student BI towards the adoption of WhatsApp platforms for learning.

Hypothesis 2: PE would have a significant influence on student BI towards the adoption of WhatsApp platforms for learning.

Hypothesis 3: FC would have a significant influence on student BI towards the adoption of the WhatsApp platform for learning.

Hypothesis 4: SI would have a significant influence on student BI towards the adoption of WhatsApp platforms for learning.

Hypothesis 5: EE would correlate with SI to influence student BI towards the adoption of WhatsApp platforms for learning.
Hypothesis 6: EE would correlate with PE to influence student BI towards the adoption of the WhatsApp platform for learning.
Hypothesis 7: PE would correlate with FC to influence student BI towards the adoption of the WhatsApp platform for learning.
Hypothesis 8: PE would correlate with SI to influence student BI towards the adoption of the WhatsApp platform for learning.
Hypothesis 9: SI would correlate with FC to influence student BI towards the adoption of the WhatsApp platform for learning.

RESEARCH METHODS

This research employs a quantitative approach to gain a thorough understanding of students' experiences and attitudes. Conducted at Walter Sisulu University (WSU), a historically disadvantaged institution in South Africa, the study focuses on students who frequently use WhatsApp for academic purposes. Primary data were collected using structured questionnaires, targeting undergraduate students from the Network and Support department on one of WSU's campuses. The literature review informed the design of statement-based questions for the survey, resulting in a final set of 30 questions. Of the 180 questionnaire requests sent to potential participants, 120 were satisfactorily completed.

The questionnaire was organized into two main sections. Section A included demographic questions designed to gather data on moderating factors within the proposed framework, while Section B contained questions about attitudes toward using WhatsApp for academic purposes. The survey consisted of self-administered questions, completed by participants online via email, with Google Forms used for distribution. The questionnaire was divided into eight parts, beginning with bibliographic questions. The initial section included four variables: gender, age, role, and experience. The remaining sections used a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) to assess participants' perceptions of WhatsApp in teaching and learning. Additional questions were included to gauge the frequency, ease of use, and perceived effectiveness of WhatsApp for academic collaboration. The data were then analyzed through descriptive statistics and correlation analysis to examine patterns and relationships between WhatsApp use and perceived academic advantages.

The data collected for this study were analyzed using the Statistical Package for the Social Sciences (SPSS). Appropriate statistical tools were employed for the analysis. A descriptive statistical method was utilized to display the percentages and frequencies of the respondents' demographic profiles. Correlation analysis was conducted to examine the relationships between the variables. The main focus of the analysis was on students' intentions to use WhatsApp for teaching and learning.

RESULTS AND DISCUSSION

This study was conducted in one of the rural universities in the Eastern Cape province of South Africa. The institutions are multiple Campus settings with four

campuses in the province, and the actual study was conducted with a group of students in the Department of Information Technology Systems on one of the campuses.

Respondent's Demographic Profile

Among the participants, 43.2% were men and 57% were women. The age distribution of participants was as follows: 60% were aged between 17 and 20, while 40% were between 21 and 30. In terms of educational qualifications, 20.8% held an advanced diploma, and 79.1% were pursuing a national diploma. Regarding their experience using WhatsApp for learning, 8.1% had been using it for 3 to 6 months, and 28.1% had 6 months to 1 year of experience. Additionally, 4.2% had no prior experience with WhatsApp, while the majority of participants (54.8%) reported having over 1 year of experience with WhatsApp for teaching and learning. Participants with less than 3 months of experience accounted for 4.8%, as illustrated in Table 1.

Table 1: The respondents' demographic composition

Demographics	Frequency	Percentage (%)
Gender		
Female	68	57
Male	52	43
Age		
17-20	72	60
21-30	48	40
Qualification		
Advanced Diploma	25	20.8
National Diploma	95	79.1
Experience		
3 Months - 6 Months	25	8.1
6 Months - 1 Year	87	28.1
No Experience	13	4.2
Over 1 Year	170	54.8
Under 3 Months	15	4.8

Reliability and Correlation Analysis

This study utilized construct validity to assess the extent of correlation between the decision variables and other theoretically predicted measures. According to Jupp (2006, pp. 314-315), construct validity also evaluates whether these decision variables do not correlate with other variables that are not theorized to be related to them.

Reliability of constructs

The reliability of all constructs in the study was assessed. Reliability analysis was conducted to evaluate the consistency of items within each construct. The research in (Hair et al., 2010) recommends an alpha value greater than 0.7 to classify a construct as highly reliable. The calculations using Cronbach's alpha indicated that

all constructs had alpha values exceeding 0.7, as presented in Table 2. Thus, the reliability of all constructs was confirmed.

Table 2: Correlation matrix of variables

Construct	Mean	St deviation	PE	EE	SE	FC	BI
PE	10.88	2.64	..512				
EE	11.57	2.23	.360**	.502			
SE	14.13	3.23	.432**	.352**	.505		
FC	11.11	2.46	.338**	.354**	.324**	.630	
BI	11.20	2.30	.412**	.310**	.401**	.538**	.670

Note: **correlation is significant at the 0.01 level (tailed).

Convergent Validity and Discriminant Validity Analysis

The study evaluated the validity of all constructs used, examining both convergent and discriminant validity. To establish convergent validity, factor analysis was performed using varimax rotation. This analysis involved observing the behaviour of each item and how well they converged to represent the overall construct. The item loadings for each construct were analyzed and ranged from 0.52 to 0.82, indicating that they exceeded the recommended threshold of 0.5. (Hair, Black, & Babin, 2010).

The study also assessed discriminant validity by using the square root of the average variance explained (AVE) to correlate the constructs, as shown in Table 2. The bolded values on the diagonal represent the square root of the AVE. To confirm discriminant validity, the diagonal values should be greater than the off-diagonal values in the corresponding rows and columns (Hair et al., 2010). In this study, the diagonal values were higher than the inter-construct correlations, thus establishing discriminant validity. To enhance the robustness of the analysis, item correlations were calculated, revealing that all items had moderate correlations—neither too high nor too low (Hair et al., 2010)as presented in Table 3.

Table 3: Correlation matrix of all the items used in the study

Items	PE	EE	SE	FC	BI
PE	1				
EE	.257**	1			
SE	.126**	.313**	1		
FC	.177**	.139**	.378**	1	
BI	.308**	.205**	.202**	.226**	1

Note: *correlation is significant at the 0.05 level (2-tailed) and **correlation is significant at the 0.01 level (tailed).

Hypothesis testing

Hypothesis 1: PE would have a significant influence on student BI towards the adoption of WhatsApp platforms for learning. The effect size of PE on student BI towards the use of WhatsApp social media revealed (β=.13, p<.005). Based on this finding, the hypothesis stands validated.

Hypothesis 2: EE would have a significant influence on student BI towards the adoption of WhatsApp platforms for learning. The effect size of EE on student BI towards the use of WhatsApp social media revealed (β=.-13, p<.005). Based on this finding, the hypothesis was not supported.

Hypothesis 3: SI would have a significant influence on student BI towards the adoption of WhatsApp platforms for learning. The effect size of SI on student BI towards the use of WhatsApp social media revealed (β=.21, p<.005). Based on this finding, the hypothesis stands validated.

Hypothesis 4: FC would have a significant influence on student BI towards the adoption of WhatsApp platforms for learning. The effect size of FC on student BI towards the use of WhatsApp social media revealed (β=.62, p<.005). Based on this finding, the hypothesis stands validated.

Hypothesis 5: PE would correlate with EE to influence student BI towards the adoption of the WhatsApp platform for learning. The finding of the correlation between PE and EE was statistically significant (β=.30, p<.005). Based on this finding this hypothesis stands validated.

Hypothesis 6: PE would correlate with SI to influence student BI towards the adoption of the WhatsApp platform for learning. The finding of the correlation between PE and SI was statistically significant (β=.29, p<.005). Based on this finding this hypothesis stands validated.

Hypothesis 7: PE would correlate with FC to influence student BI towards the adoption of the WhatsApp platform for learning. The finding of the correlation between PE and FC was statistically significant (β=.27, p<.005). Based on this finding this hypothesis stands validated.

Hypothesis 8: EE would correlate with SI to influence student BI towards the adoption of WhatsApp platforms for learning. The finding of the correlation between EE and SI was statistically significant (β=.28, p<.005). Based on this finding this hypothesis stands validated.

Hypothesis 9: EE would correlate with FC to influence student BI towards the adoption of the WhatsApp platform for learning. The finding of the correlation between EE and FC was statistically significant (β=.35, p<.005). Based on this finding the hypothesis stands validated.

Hypothesis 10: SI would correlate with FC to influence student BI towards the adoption of the WhatsApp platform for learning. The finding of the correlation between SI and FC was statistically significant (β=.22, p<.005). Based on this finding this hypothesis stands validated.

DISCUSSION

Table 5 presents a summary of the findings. The main goal of this study was to evaluate the UTAUT model with the widespread use of WhatsApp social media among higher education students. Additionally, it aimed to identify the factors that influence students' acceptance of the platform for their learning activities. A thorough analysis was conducted on the collected data before fitting it to the specified model for the study. Consistent with findings from other research in the literature regarding the effectiveness of the UTAUT model in assessing the acceptance of innovations in education, this study also reveals the following results.

Table 5: Summary of the results

Hypothesis	Relationship	Findings	Results
H1	EE ⟶ BI	Negative	Not-Supported
H2	PE ⟶ BI	Negative	Supported
H3	FC ⟶ BI	Positive	Supported
H4	SI ⟶ BI	Positive	Supported
H5	EE ⟷ SI	Positive	Supported
H6	PE ⟷ EE	Positive	Supported
H7	PE ⟷ FC	Positive	Supported
H8	PE ⟷ SI	Positive	Supported
H9	SI ⟷ FC	Positive	Supported

The first hypothesis proposed that effort expectancy (EE) would positively influence students' behavioural intention (BI) to accept the WhatsApp platform for learning; however, this hypothesis was not supported. The findings indicated a negative impact on students' BI, which contradicts the original theoretical framework of the study. This suggests that students may prefer to use the platform for social interactions rather than for learning, especially since the platform's interface is not tailored for educational engagement. Consequently, the effort required to use the platform, regardless of how minimal it seems, may not significantly affect students' willingness to accept it for learning.

Second, the hypothesis (PE→BI) shows a positive and significant influence of performance expectancy (PE) on students' behavioural intention (BI) to use WhatsApp social media for learning. This finding supports the original theoretical framework of UTAUT (Venkatesh et al., 2003). The implication is that students view social media as a valuable tool for learning and believe that using it will enhance their academic performance.

Thirdly, the hypothesis that facilitating conditions (FC) would influence students' behavioural intention (BI) to accept WhatsApp social media has been validated. This hypothesis demonstrated the strongest effect size among the variables studied. This finding aligns with the original theoretical framework of the study. The implication is that if students are provided with the necessary ICT resources and software, it will significantly encourage them to use the platform for learning.

Fourthly, the hypothesis stating that social influence (SI) would affect students' behavioural intention (BI) to accept WhatsApp social media has been validated. This finding also confirms the original theoretical framework of the study regarding the significance of SI in the acceptance of information systems by users. It suggests that if a student's peer group and associates decide to use the platform for learning, it will encourage their intention to accept it for educational purposes. In other words, peer and societal influences are major factors contributing to the adoption of the platform for learning among students.

The fifth hypothesis revealed a positive significant relationship between effort expectancy (EE) and social influence (SI). This finding suggests that if individuals important to students, such as peers and family, adopt the WhatsApp platform for interaction, it will enhance their ease of use of the platform for learning activities. This result supports earlier findings (Humaid & Ibrahim, 2019).

The sixth hypothesis indicates a correlation between performance expectancy (PE) and effort expectancy (EE) within the model. This finding suggests that if students perceive WhatsApp social media as easy to use for their learning activities, it will enhance their perception of its usefulness (PoE) and encourage them to adopt the platform. This result supports the findings by (Almogheerah, 2020), which reported a relationship among UTAUT constructs in explaining the adoption of new technologies in teaching and learning.

The seventh hypothesis indicated a positive significant relationship between performance expectancy (PE) and facilitating conditions (FC). This finding implies that if students use WhatsApp social media to connect with their peers, it will positively impact their perception of its usefulness and encourage its use for learning activities. This result aligns with the findings of (Almogheerah, 2020).

The eighth hypothesis revealed a positive significant relationship between performance expectancy (PE) and social influence (SI). This finding suggests that if students observe many of their peers using the platform for learning, it will enhance their perception of its usefulness (PoE) and encourage them to adopt it for educational purposes. This result is also in line with previous studies (Chao, 2019; Venkatesh et al., 2003).

Finally, the Ninth hypothesis revealed a positive significant relationship between social influence (SI) and facilitating conditions (FC). This finding is in line with results from other studies (Almogheerah, 2020).

CONCLUSION

This study found that performance expectancy, effort expectancy, and social influence are significant predictors of behavioural intentions. These findings corroborate the postulations of the original UTAUT model. This study also indicated that facilitating conditions significantly predict behavioural intention. This contradicts the original UTAUT postulation about facilitating conditions and behavioural intentions. Thus, the study contributes new knowledge about predictors of behavioural intention in the adoption of the technology.

Implications of practice

Before the adoption of WhatsApp for supporting learning in higher education, administrators and faculty should collaborate to ensure that determinants of behavioural intentions are adequately catered for. For instance, authorities of educational institutions should provide facilitating conditions such as helping students who do not own WhatsApp-supported mobile devices to acquire some. This can be achieved by the university awarding contracts to individuals or organizations to supply mobile devices at a reduced cost to the students. Once provisions are made by the university to support implementation, the student will be willing to accept the technology. Furthermore, technical support should be provided by the institution to both learners and lecturers to facilitate efficient utilization.

Finally, instructional designers should specifically incorporate instructional activities involving the use of WhatsApp chat in the course that lack electronic means of communication among students and faculty. Once the students are made aware

that WhatsApp messaging is officially part of their instructional strategies, they will have the belief that university authorities expect them to use it. This will subsequently influence their intention to adopt WhatsApp for pedagogical use.

Limitations of the study and recommendations for future studies

This study was associated with some limitations. Firstly, the participants were selected from only WSU. This might affect the external validity of the findings. Hence, the results must be generalized with caution. It is therefore recommended that future research expand the scope of the study to include other tertiary institutions. This would further enhance the external validity of the results. Secondly, this study utilized the UTAUT model in assessing factors of students' adoption of WhatsApp usage for teaching and learning purposes in the context mandated by instructors. Other studies may utilize the UTAUT2 model to replicate this study in a context where students would voluntarily opt to engage in or initiate the use of WhatsApp for learning purposes.

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