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THE IMPACT OF PERFORMANCE EXPECTANCY ON BEHAVIORAL INTENTION TO USE WIRELESS TECHNOLOGIES IN PUBLIC UNIVERSITIES IN UGANDA

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ABSTRACT. The rapid evolution of wireless technologies has transformed the educational landscape, particularly in higher education institutions. This study examines the impact of performance expectancy on the behavioral intention to use wireless technologies(WTs) in public universities in Uganda. Performance expectancy, defined as the degree to which individuals believe that using a technology will enhance their performance, is a critical factor influencing technology adoption. The study opted for cross sectional survey methodology and using a quantitative approach, data were collected from students and faculty across selected public universities in Uganda. Results of correlation and regression analysis indicated that a positive and significant relationship exists between Performance Expectancy and Behavioral Intention to Use. The findings suggest that enhancing users' expectations of performance benefits could significantly improve technology usage in educational settings. This study provides valuable insights for policymakers, university administrators, and technology providers aiming to foster wireless technology adoption in Uganda's higher education sector.

KEYWORDS: *UTAUT, Performance Expectancy, Behavioral Intention to Use and Wireless Technologies*

1. INTRODUCTION

Public universities in Uganda are witnessing rapid growth in the number of enrolled students, which requires further infrastructural development and the creation and construction of more colleges, schools and facilities, along with the required services. However, since the installation and use of wired technologies is highly expensive, and its maintenance is expensive, some universities resorted to the use of wireless technologies to link students and staff to their systems [1].

According to [22],wireless technologies consist of networking hardware and software which increase on the mobility of user access to internet since they eliminate the need for wired technologies. This can be achieved through the use of wireless technology devices like; cell phones which are used by students in learning, wireless modems used by students to connect to wireless networks instead of telephone systems, wireless hotspots installed at campuses for students to access internet using their personal laptops[13]. [12] considers two wireless technologies that is Wi-Fi and Bluetooth to link between access devices and access providers to address the needs of rural communities by exploring and implementing potential innovative low cost technologies for Internet access.

Wireless technologies were introduced in universities to be used for academic purposes like sending and receiving academic emails, use of chat communication technologies to join discussions or collaborate with classrooms worldwide, accessing electronic notes. Instead the students use them for non-academic purposes like chat rooms, downloading music and facebook, games among others [13].

In addition, a few years ago universities were struggling to keep mobile phones and other wireless devices away from students especially during lectures whereas now they are doing their best to encourage students to use smart phones, tablets, laptops among other wireless devices even during lectures. Wireless technologies are as well being considered as critical tools to enhance students'

learning experience and provide powerful educational opportunities [7]. [9] noted that mobile wireless technology promotes interactive lectures thereby enriching the learning process of students in classroom or online classes. The adoption of wireless technologies is increasing and students are more satisfied because it can solve math problems or issues using their own ideas [15]. [15] further argues that mobile learning should be developed using wireless technologies such as tablets and android. According to [11], the use of wireless technologies can provide opportunities for students to conduct an investigation and critical thinking skills of learning which is only done in the classroom and can effectively improve the learning behavior more positively.

Similarly, a report on socioeconomic impacts of wireless technology has revealed that the introduction of wireless technologies has enabled instant communication at all times and places, speedy transfer of information and services over long distances irrespective of the geographic barriers [7].

Despite the widely recognized benefits offered by wireless technologies, wireless technology adoption is underutilized in Ugandan Public Universities, with limited studies focusing on low-developed countries like Uganda. This study seeks to address this gap by examining the impact of performance expectancy on the behavioral intention to use wireless technologies in public universities in Uganda.

2. LITERATURE REVIEW

2.1. Performance Expectancy

Performance expectancy is the degree to which a user believes that using the technology will help him or her attain benefits or have better and effective performance. In other words, Performance expectancy means to what extent users believe their performance will improve if they adopted a technology. [17] from the work of [18].Thus, UTAUT model is a set or series of previous models. Five factors from previous models assisted in the formation of performance expectancy variable consisting of perceived usefulness from Technology Acceptance Models (TAM), external motivation from Motivational Model (MM), job fit from utilization model, relative advantages from innovation diffusion theory (IDT) and an outcome from expectations social cognition theory (SCT) [17],[16]. Hence, several past studies uncovered that performance expectancy plays a significant role in intention to use information technology [3], [8] ,[23].

2.2. Performance Expectancy and Behavioral Intention

Performance expectancy, defined as the degree to which users perceive a technological system as useful and beneficial in performing their tasks, is a key determinant of behavioral intention to use technology[28]. Studies have consistently shown that performance expectancy has a direct and positive impact on the adoption of various technologies.

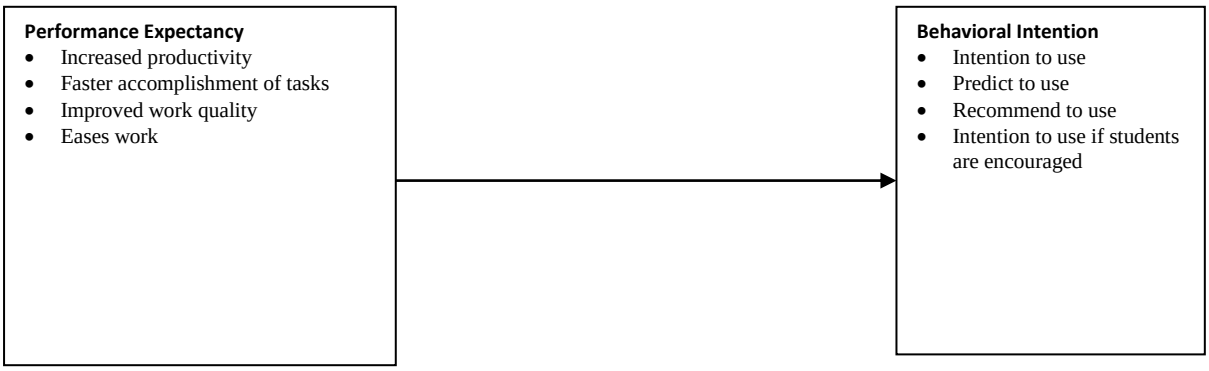
In the context of mobile commerce, research has demonstrated that performance expectancy significantly influences consumers' behavioral intentions. For instance, a study conducted in Pakistan found that performance expectancy was a strong predictor of the intention to adopt mobile commerce technologies, highlighting its importance in shaping user behavior[29].

Similarly, in the realm of mobile health services, performance expectancy has been identified as a crucial factor in determining the intention to adopt such services. Studies have shown that when users perceive mobile health services as useful and beneficial, they are more likely to adopt and use these services[30].

2.3. Theoretical Analysis

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a widely used framework for understanding the adoption of new technologies. The Unified Theory of Acceptance and Use of Technology (UTAUT) posits that the intention to use information systems to follow-up use behavior [24]. The theory considers that the performance of key structures, anticipated value, anticipated workload, social inspiration and favorable surroundings are all through the elements of purpose and

they use performance of information systems [18]. Further, [25] proposed that sex, age, involvement and age voluntary procedures mitigate the influence of the four key structures on use intentions and performance. UTAUT is meant to be adjusted to fit the technology being queried; therefore, a certain amount of modification is expected. Therefore, in this study, UTAUT is used as baseline model while the moderating variables of age, gender, experience and voluntariness of use are excluded. The research model posits that behavioral intention to use wireless technologies is determined by Performance Expectancy (PE) as shown on the proposed model below;



3. RESEARCH METHOD

3.1. Research Design

This study adopts a quantitative research design to investigate the relationship between performance expectancy and behavioral intention to use wireless technologies in public universities in Uganda. A cross-sectional survey was conducted to collect data from academic staff and students across selected public universities.

3.2. Population and Sample

The target population included academic staff and students from five public universities in Uganda, including Makerere University and Kyambogo University. A sample size of 334 participants was determined using Krejcie and Morgan's sample size determination table. The sample was stratified to ensure that both students and academic staff were adequately represented.

3.3. Data Collection

A structured questionnaire was used to collect data. The questionnaire was divided into two sections. The first section gathered demographic information about the respondents, while the second section focused on the constructs of performance expectancy and behavioral intention to use wireless technologies. Items in the questionnaire were adapted from established studies [2], [3] and measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

3.4. Validity and Reliability

To ensure the validity of the instrument, content validity was established through expert reviews. The content validity index (CVI) was found to be 0.70 or higher for all variables, which is acceptable according to [26]. Internal consistency was assessed using Cronbach's alpha, with all constructs showing reliability coefficients above 0.70, as suggested by [27]. The validity and reliability of the variables is indicated in Table 1 and Table 2 below respectively.

3.5. Data Analysis

The data collected were analyzed using descriptive and inferential statistics. Pearson correlation analysis was conducted to examine the relationship between performance expectancy and behavioral intention. Additionally, regression analysis was performed to assess the predictive power of performance expectancy on behavioral intention to use wireless technologies.

Table 1: Content Validity Index

S/N	Variable	CVI	No. of items
01	Performance Expectancy	.71	6
02	Behavioral Intention	.70	6

Table 2: Reliability Test

S/N	Variable	Cronbach Alpha	No. of items
01	Performance Expectancy	.78	6
02	Behavioral Intention	.77	6

3. Results

In order to test the formulated hypothesis, we use the Pearson (r) correlation analysis and regression analysis to ascertain the predictive effect of Performance Expectancy on Behavioral Intention to use WTs and the results are displayed in table 3 and table 4 respectively;

Table 3: Correlation Analysis

S/N	Variable	1	2
01	BI	1	
02	PEXPT	.205**	1
	N=205	***P<0.01*	*Level (1-tailed)*

Source: Primary Data

Key: BI = Behavioral Intention, PEXPT = Performance Expectancy

Table 4: Results of Simultaneous Regression Analysis of PEXPT on BI

Variable	Beta	T	P
(Constant)		9.095	.000
PEXPT	.205	3.399	.001
R = 205			
R^2 = .042			
Adjusted R^2 = .038			
F = 11.553			

Source: Primary Data

Key: PEXPT = Performance Expectancy

From table 3 above, at a preliminary level, correlation results indicated that Performance Expectancy is positively and significantly related to Behavioral Intention ($r = .205$; $p < 0.01$). This is an indication that a positive change in Performance Expectancy is associated with a positive change in Behavioral Intention. Further evidence is adduced by the results of regression analysis as displayed in table 4. Results show that approximately 4 per cent of the total variance in Behavioral Intention is explained by Performance Expectancy ($R2 = .042$; $p < .01$). The regression coefficient of Performance Expectancy was significant ($\beta = .205$, $t = 3.399$; $p < .01$). On account of this, it can be adduced that Performance Expectancy is positively related to Behavioral Intention to use WTs in public universities in Uganda.

4. DISCUSSION

Performance Expectancy was found to have a significant direct effect on the Behavioral Intention to use WTs in public universities in Uganda. According to the original Unified Theory of Acceptance and Use of Technology, Performance Expectancy is hypothesized to affect behavioral intention to use a particular technology and it relates to what users perceive as the performance benefits of using such a technology.

This study found out that academic staff in public universities in Uganda believe that behavioral intention to use WTs would be more useful in their job performance if successfully adopted for academic use. This might be because these academic staff want to adopt WTs for they think WTs experience will be beneficial for future job preparation and accomplishing, improved their job performance. Or, they feel it would give them competitive edge over other universities engaged in e-learning in terms of academic delivery. These findings are consistent with literature [4], [10], [19],[20],[21]. This stream of literature provides evidence of the significant effect of Performance Expectancy on behavioral intention to use a technology. The Performance Expectancy and Behavioral Intention relationship is strongly based on the idea that, people form intention toward behaviors they believe will increase their system use, over and above whatever positive or negative feeling may be evoked toward the behavior. These revelations further confirm studies by [14] which supports the view that stressing Performance Expectancy leads to Behavioral Intention to use. Another study by [5] found that Performance Expectancy is an important factor in determining actual usage via Behavioral Intention to Use.

Results of this research fill an important gap in literature by contributing the results of the determinants of individual's intention to use wireless technologies in developing economies context, with a theoretical based empirical investigation. Consequently, the empirical validation of model posits that model is valid and can generally be applied to explore and achieve better results in similar contextual setting.

5. CONCLUSION AND RECOMMENDATIONS

This study investigated the impact of performance expectancy on behavioral intention to use wireless technologies in public universities in Uganda. The findings reveal that performance expectancy significantly influences behavioral intention among academic staff and students. Specifically, individuals who perceive that wireless technologies will enhance their performance are more likely to adopt and use them. This finding aligns with previous studies in both developed and developing countries, underscoring the importance of performance expectancy in technology adoption.

The results suggest that wireless technologies have the potential to enhance the teaching and learning experience in Ugandan public universities. However, for these benefits to be fully realized, universities must ensure that staff and students perceive the use of wireless technologies as advantageous to their academic and professional goals.

Future studies should investigate other factors, such as effort expectancy and social influence, that may affect the adoption of wireless technologies in public universities. Moreover, qualitative studies could explore the experiences of users to gain a deeper understanding of their motivations and challenges in using wireless technologies.

REFERENCES

[1] Aruba Networks. (2012). Islamic university in Madinah deploys wireless networks for students and staff. Aruba Networks.

[2] Anderson, J. E., & Schwager, P. H. (2004). SME Adoption of Wireless Lan Technology: Applying the UTAUT Model. The 7th Annual Conference of the Southern Association for Information Systems (pp. 39-43). Southern Association for Information Systems.

[3] Aytekin, A., Özköse, H., & Ayaz, A. (2022). Unified theory of acceptance and use of technology (UTAUT) in mobile learning adoption: Systematic literature review and bibliometric analysis. COLLNET Journal of Scientometrics and Information Management, 75-116.

[4] Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies? Decision Sciences, 30(2), 361-391.

[5] Alblooshi, M., & Abdul Hamid, R. (2022). Performance expectancy and behavioral intention to use new technologies: A comparative study. Technology in Society, 58, 101208.

[6] Alraja, M. N. (2015). User acceptance of information technology: Exploring the role of social influence and perceived usefulness. Journal of Social Sciences, 41(1), 18-25.

[7] BSR & CTIA-The Wireless Association. (2012). Socioeconomic impacts of wireless technology in education. Journal of Wireless Communication, 20(2), 5-10.

[8] Carter, L., Schaupp, L. C., & McBride, M. E. (2011). The UTAUT model for understanding mobile commerce adoption: Cross-country analysis. Journal of Electronic Commerce, 17(1), 25-34.

[9] Chin, M. L., & Vimala, K. (2016). Interactive learning and mobile wireless technologies in higher education. Journal of Educational Research, 35(2), 112-123.

[10] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35(8), 982-1003.

[11] Kutluk, F. A., & Gulmez, M. (2014). The effects of mobile learning on student performance. Journal of Wireless Technologies, 14(1), 45-55.

[12] Morris, D. (2004). Wireless technologies for rural internet access. Technology and Society Journal, 12(3), 27-33.

[13] Ndawula, P. (2011). The use of wireless technologies in Ugandan universities. Educational Technology Journal, 12(5), 23-27.

[14] Nyembezi, L. S., & Bayaga, A. (2014). Technology acceptance model in South Africa's educational sector. International Journal of Information Systems, 30(4), 152-160.

[15] Rif'at, M. (2015). Wireless technology in mobile learning: Opportunities and challenges. Journal of Wireless Technologies, 20(3), 89-95.

[16] Salloum, S. A., & Shaalan, K. (2018). Factors affecting the adoption of information technologies: A review and research framework. Information Systems Journal, 23(1), 123-143.

[17] Sair, S., & Danish, R. (2018). Performance expectancy and technology adoption in educational settings. Educational Technology Review, 11(2), 67-72.

[18] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. Management Information Systems Quarterly, 27(3), 425-478.

[19] Venkatesh, V. (1999). Creation of favorable user perceptions: Exploring the roles of intrinsic motivation, extrinsic rewards, and user involvement. Management Information Systems Quarterly, 23(2), 239-260.

[20] Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. Management Science, 46(2), 186-204.

[21] Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. Management Information Systems Quarterly, 24(1), 115-139.

[22] Seymour, C. (2012). Wireless networks in education: Current trends and future directions. Journal of Communication Technologies, 7(3), 145-156.

[23] Trybou, J. (2017). The role of performance expectancy in user adoption of technology in healthcare. Health Information Technology Journal, 12(6), 333-340.

[24] Vrazalic, L., & Macgregor, R. (2009). Barriers to e-commerce adoption: A study of Australian and Croatian SMEs. Journal of Electronic Commerce Research, 7(1), 33-44.

[25] Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. Computers in Human Behavior, 26(4), 760-767.

[26] Amin, M. E. (2007). Social science research: Conception, methodology, and analysis. Makerere University.

[27] Nunnally, J. C. (1978). Psychometric theory (2nd ed.). McGraw-Hill.

[28] Chao, C. M. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. Frontiers in psychology, 10, 1652.

[29] Sair, S. A., & Danish, R. Q. (2018). Effect of performance expectancy and effort expectancy on the mobile commerce adoption intention through personal innovativeness among Pakistani consumers. Pakistan Journal of Commerce and social sciences (PJCSS), 12(2), 501-520.

[30] Mensah, I. K., Zeng, G., & Mwakapesa, D. S. (2022). The behavioral intention to adopt mobile health services: The moderating impact of mobile self-efficacy. Frontiers in Public Health, 10, 1020474.