

Determinants of the intention to use information system: A case of SIMAD University in Mogadishu, Somalia



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ABSTRACT

Online information management system (OIMS) contributes to the overall operations of higher education systems, enhancing operations' productivity and facilitating the university's service delivery. This article highlights the use of the OIMS system by SIMAD University (SU). The system is crucial in enhancing the university's productivity and performance. In this research, the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT) are combined to provide a stronger understanding of information systems (IS). Other than that, the model was tested based on the sample size of 100 staff and students from different departments using the path coefficient created via a bootstrapping method. According to the obtained results, perceived usefulness (PU) and perceived ease of use (PEOU) have little impact on users' intentions to utilize IS. Still, facilitating condition (FC), performance expectancy (PE), as well as effect expectancy (EE) do have an impact. The knowledge and literature in the field of this study are enriched by looking at the UTAUT and TAM from the standpoint of IS.

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1. Introduction

Information is an invaluable resource with a huge potential for organizations (Macevičiūtė and Wilson, 2002). Such resources have endless possibilities ranging from being viewed and understood to using as inputs to problem-solving and task-execution strategies (Back and Moreau, 2001). Information management (IM) is a way of using technology to collect, process, and condense information for efficient management. A more comprehensive level of information processing and distribution is provided by information and communication technology (ICT). Subsequently, it is also a key source of creativity and productivity, consolidating huge information and knowledge sources, including books, databases, TV programs, telephones, games, and other forms of information for educational use and benefits (Livingstone, 2012).

Note that ICT application has been a vital part of university students' learning processes both in and out of the classroom environment in educational institutions (Lawrence, 2015). The COVID-19 national lockdowns, which required schools and universities to teach and distribute curriculum online, significantly impacted the IM system (Dwivedi et al., 2020). Hence, using one information system (IS) has its recognized role in helping academicians increase efficiency in predominantly paper-based activities (Abdulrazaq and Mustafa, 2017).

As per Basri et al. (2018), most universities that completely adopted ICT possess significant improvements in learning approaches, teaching, science, and innovation. Meanwhile, Kaul (2006) stated that obtaining e-notifications about admission was the first step in the implementation of IS in higher learning institutions.

Moreover, some higher education institutions in Somalia use a manual system for their university operations and activities. Still, this manual system has its challenges because it involves filling out many forms and submitting them to various offices. The manual system also has its natural problems, including difficulty locating students' registration, duplications of students' data, loss of forms and other necessary documents, and data integrity.

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On the other hand, other universities in Somalia have invested a lot of cost and effort to implement the ICT application for their academic operations. This improves learning and teaching methods and other university development. SIMAD University (SU) in Somalia, which is used as the case study, has implemented Online Information Management System (OIMS) to manage all university operations, including student enrollment, admissions, fee collection, examinations, human resource (HR), procurement, and other essential activities of the university. Therefore, this research proposes to evaluate users' acceptance of the intention to use IS for SU in Somalia employing the Unified Theory of Acceptance and Use of Technology (UTAUT) as well as the technology acceptance model (TAM).

The remaining sections are arranged as follows: The first part reviews the study's literature. The second segment shows the framework of the research and hypothesis development. Consequently, the third part provides the setting of the research. The study's methodology is covered in the fourth section. The fifth section examines the data, and the sixth section explains the findings. The last segment provides the concluding remarks of this research.

2. Literature review

Universities as well as businesses, despite their distinctive characteristics, both have many problems in common; regardless of not the business world uses Enterprise Resource Planning (ERP), universities insist on some keyword-serving terms like campus management systems (Pollock and Cornford, 2004). The COVID-19 restrictions have perhaps shaped the university identity, accelerating digital transformations across many divisions (Bygstad et al., 2022). The OIMS serves the interest of various education stakeholders, which includes parents, students, administrators, as well as teachers (Malhotra et al., 2020). This possibly integrates university life with a society where information resources are shared and utilized in a wider network (Cobarsí et al., 2008). Correspondingly, this rationalizes the calls for unified information systems (IS) that consolidate the existing information silos under one roof (Sanchez-Puchol et al., 2017).

Changes and advances in new technology in academic settings lead to the availability of massive amounts of information and proper storage. In addition, when implementing web-based university information, the management of information becomes crucial. This is with regard to well-defined needs, with speed and easy access to information being underscored. This strategy is seen as a major shift from traditional IM practices (Pinho et al., 2018). This aligns with the central role of IM drives process management for better operational performance (Prajogo et al., 2018).

Other than that, research on end-users involvement and participation in IS use has been around for decades (Harwick and Barki, 1994). As

educational institutions became universally attracting students from all over the world, the urge for integrated IS increased grew, creating new possibilities (Rothnie, 1993).

To handle the growing number of students in higher learning institutions, studies demonstrate the importance of student registration systems (Egoeze et al., 2018). Likewise, record management supports universities in managing their information efficiently so that IS will best utilize their corporate storage and achieve accountability and good governance (Chinyemba and Ngulube, 2005). The use of technology in a higher learning institution's admissions and registration procedures will have a significant impact meaning that it will help institutions to achieve their mission and enables productivity (Elpez and Fink, 2006). Most higher learning institutions in Kenya believe in using IS to eliminate traditional challenges, such as a manual registration process. Therefore, this will enable decreasing number of workers in the admission department (Duncombe and Molla, 2009). IS plays an important role in eliminating the paperwork because it leads to faster.

Reasons for the intention to use an E-Wallet Application are presented in prior literature. In order to comprehend how users, perceive using technology, the study's components included security and privacy confidence, trustworthiness, social influence (SI), perceived usefulness (PU), and perceived ease of use (PEOU). The results focus on variables businesses can consider when designing product and marketing strategies. As a result, organizations will be in a good position to attract potential customers that use E-Wallets (Nag and Gilitwala, 2019).

2.1. TAM

Davis (1989) initially used the term "technology acceptance model," which was altered from the Theory of Reasoned Action (TRA). This theory is the most used model for determining user adoption of technological innovation. The PU, as well as PEOU, are two particular beliefs on which the use of an IS is predicated. PEOU stands for potential user PEOU, which measures how user-friendly a system is thought to be. The subjective likelihood that utilizing a particular technology will improve a potential user's activity is known as PU (Davis, 1989).

2.2. UTAUT

Unified theory of acceptance and use of technology (UTAUT) makes an effort to clarify how users intend to utilize IS and their subsequent behavior-use patterns. According to this hypothesis, four factors can accurately anticipate a person's behavioral usage intention. The four are performance expectancy (PE), effort expectancy (EE), facilitating conditions (FC), as well as SI (Venkatesh et al., 2003).

3. Research methodologies

3.1. Research approach

This research utilizes the combination between the TAM and the UTAUT and analysis of quantitative data, an online poll, as well as a random sampling of

(100 SU staff and students), was used. In addition, several departments' students and staff were addressed.

Our research model comprises seven parts, each evaluated using a range of criteria. To maintain the content validity, we used most of our items from the previous literature study (Straub et al., 2004). In Fig. 1, the research model is displayed.

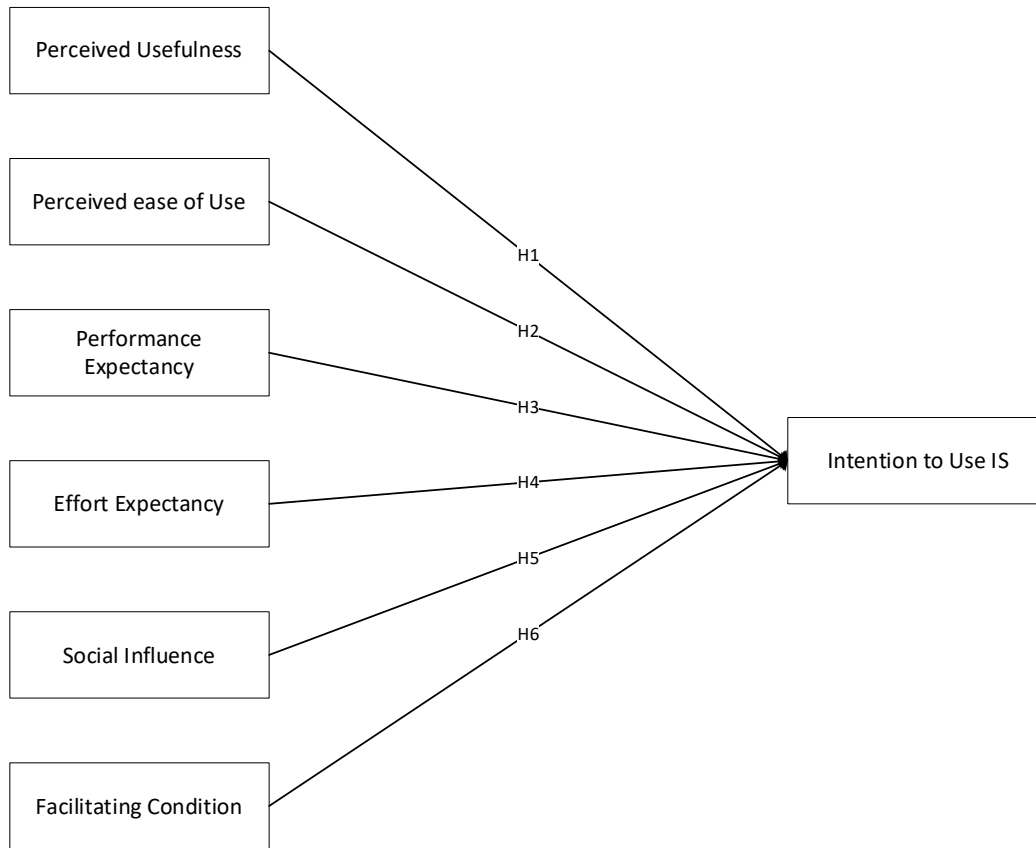


Fig. 1: Proposed research model for the intention to use information system

3.2. Hypothesis

A. PU: The term perceived usefulness (PU) refers to workplace productivity, performance, and effectiveness. It may also be defined as the user's belief that employing an application system will improve their job performance in an organizational setting (Davis, 1989). Note that PU is a key component of the TAM framework's behavioral intention to use (BI) of the relevant technology (Hamid et al., 2016; Park et al., 2014). Moreover, past research has indicated that PU is positive pertaining to the intention to use IS and e-service context (Gefen et al., 2003; Hamid et al., 2016), online travel services (Li and Liu, 2014), and health information system (Mou and Cohen, 2017). Thus, we suggested below hypotheses:

H1: PU has a positive effect on the intention to use IS.

B. PEOU: Perceived ease of use (PEOU) may be defined as the degree to which users believe their desire to use a low-effort information system (IS) is genuine. For instance, users will be more excited to know about its features and desire to maintain

using the system. Other than that, preliminary research suggests that with the intention of using in the IS, PEOU has a big impact (Hamid et al., 2016; Chiu and Wang, 2008). To summarize, academic institutions can employ Iss as a new approach to excel in their activities and maintain a competitive position in the market. As a result, the hypothesis is then proposed.

H2: PEOU has a positive effect on the intention to use IS

C. PE: The level of confidence users has in their ability to use particular IS to support their job performance is known as performance expectancy (PE). It helps students to accomplish their tasks more efficiently, along with increased academic skills and performance. It is said to be a renowned forecaster of intention for the use of a new IS in various contexts (Samsudeen and Mohamed, 2019). Furthermore, the existing literature covers the PE's influence on the intention to use IM systems (Ayaz and Yanartaş, 2020). Regarding the scope of this research, PE is characterized by how confident users are using the online campus IM

system. Therefore, a hypothesis proposed in this research is that:

H3: PE positively influences the intention to use IS.

D.EE: Effort expectancy (EE) is a term used to describe how convenient using IS is. In both controlled and independent use situations, it has been demonstrated to possess a role in influencing BI. It is regarded as a base of measurement for various constructs, including IS's flexibility, ease of use, ease of learning, as well as interface design (Ayaz and Yanartaş, 2020). EE reflects the convenience the user experiences when using technology (Samsudeen and Mohamed, 2019). The use of EE is common in its significance on BI is well-grounded (Ayaz and Yanartaş, 2020). This research puts forward the understanding that if the users use the OIMS with minimum effort, they will be more likely to accept it. As a result, the research suggests the hypothesis as follows:

H4: EE positively influences the intention to use IS.

E. SI: Social influence (SI) is expressed as the degree someone believes individuals expect them to use an information system (Buabeng-Andoh and Baah, 2020). It is indicated that the level of influence of SI is relatively high when the use of IS is obligatory (Ayaz and Yanartaş, 2020). Additionally, its influence is more evident in the users' behaviors, including friends' or higher-ranking superiors' opinions (Afonso et al., 2012). According to the UTAUT model, user views are beliefs that have an impact on the usage of electronic document management systems. Apart from that, research shows that SI possesses a big impact on users' intentions to use these systems (Afonso et al., 2012; Tosuntaş et al., 2015; Hoque and Sorwar, 2017; Ayaz and Yanartaş, 2020). This study establishes the given hypothesis in light of the previous explanation:

H5: The intention to use IS is positively influenced by SI.

F. FC: The term facilitating conditions (FC) refers to "the extent to which a person considers that a technical and organizational framework is in place to promote the use of the system" (Wong et al., 2013). The physical settings and resources that one perceives around affect the smoothness of task execution (Samsudeen and Mohamed, 2019). From a learning management system (LMS) perspective, FC indicates how strongly a person thinks the necessary resources are available to make the system easier to use (Buabeng-Andoh and Baah, 2020). Other than that, user support and training, system accessibility, and materials to elevate knowledge and skills among users are considered facilitating factors (Samsudeen and Mohamed, 2019). It is indicated that FC is assumed to be one of the prominent influencing factors determining

an individual's usage of technology (Venkatesh et al., 2003). As a result, the following theory is put forth:

H6: FC positively influences the adoption of IS.

4. Results and discussion

4.1. Data collection

The study examines the use of IS at SU. The elements of the UTAUT construct were adapted from (Venkatesh et al., 2003), while the items of the TAM construct were adopted from a survey instrument that was built based on prior research (Goodhue and Thompson, 1995).

The online survey form was disseminated using Google Forms, with 100 responses. Twenty UTAUT measures, nine TAM measures, and four demographic items made up the survey. There were so 33 questions in total. Each response is scored on a 5-point scale, with 5 denoting strong agreement, 4 indicating moderate agreement, 3 representing agreement, 2 signifying disagreement, as well as 1 denoting extreme disagreement.

4.2. Profile of respondent

Table 1 compares the proportion of male respondents to female respondents, roughly 69 to 31. Three age groups of respondents were identified: Those under 23 (n=51), between 24 and 44 (n=44), and 45 and over (n=5). Four categories of educational level were used to categorize the respondents: Diplomas (n=4), bachelor's degrees (n=61), master's degrees (n=20), and doctorates (n=15). Senior students (n=65) and SU personnel (n=35), including ICT officials, faculty members, and lecturers, made up the majority of the responders.

4.3. Measurement model

Both convergent and discriminant validity were used to analyze the measurement model.

4.3.1. Convergent validity

Convergent validity refers to an internal consistency metric that analyzes the adequacy of a scale's correlation of items to assess the same factor (Hair et al., 2017). Average Variance Extraction (AVE), factor loading, Cronbach's Alpha, Composite Reliability (CR), Dijkstra-rho Henseler's (A), as well as Jöreskog's rho (c) measurements, are used to determine them. According to this research, the item loading was higher than 0.7. As seen in Table 2, the AVE was greater than 0.5, and Dijkstra-(A) Henseler's and Jöreskog's (c) rho values were greater than 0.7. Because all three criteria met the necessary threshold values, these results confirm that all criteria were satisfied. Simultaneously, due to low factor loading, two items were dropped.

Table 1: Profile of the respondent

| Distribution | Frequency | Percentage (%) |
|-----------------|-------------|----------------|
| Gender | Male | 69% |
| | Female | 31% |
| Age | 18-23 years | 51% |
| | 24-44 years | 44% |
| | >=45 years | 5% |
| | Diploma | 4% |
| Education level | Bachelor | 61% |
| | Master | 20% |
| | PHD | 15% |
| | Employee | 35% |
| Position | Student | 65% |

Table 2: Convergent validity

| Construct | Items | Loadings | AVE | CR |
|---------------------|-------|----------|-------|-------|
| EE | EE1 | 0.697 | 0.639 | 0.778 |
| | EE2 | 0.89 | | |
| FCs | FC1 | 0.856 | 0.719 | 0.885 |
| | FC2 | 0.828 | | |
| | FC4 | 0.859 | | |
| Intention to use IS | IUIS2 | 0.723 | 0.549 | 0.784 |
| | IUIS3 | 0.654 | | |
| | IUIS4 | 0.835 | | |
| | PE1 | 0.831 | | |
| PE | PE2 | 0.752 | 0.601 | 0.819 |
| | PE3 | 0.74 | | |
| | PEOU1 | 0.642 | | |
| PEOU | PEOU3 | 0.746 | 0.556 | 0.788 |
| | PEOU4 | 0.836 | | |
| | PU1 | 0.669 | | |
| PU | PU2 | 0.703 | 0.541 | 0.778 |
| | PU4 | 0.826 | | |
| | SE1 | 0.849 | | |
| SI | SE2 | 0.894 | 0.776 | 0.912 |
| | SE3 | 0.898 | | |

4.3.2. Discriminant validity

After verifying the convergency validity, examining the discriminant validity comes next. This study uses the Fornell–Larcker criterion, which is very common among the research community. As presented in Table 3, all constructs demonstrate appropriate discriminant validity (Fornell and Larcker, 1981) when AVE's square root is greater than the correlation of all reflective constructs.

4.4. Structural model

In this research, a variant of the multiple linear regression model known as Partial Least Squares (PLS) regression was used. Hair et al. (2017) recommend evaluating the structural model using the standard beta, R-squared, and t-values via bootstrapping approach having a resample of 5000 and effect size (f^2), including predictive relevance (Q^2) to examine the structural model. The outcomes of this study's evaluation of each of these matrices and parameters are displayed in Table 4 and Fig. 2.

The findings of the study were as follows: EE has positively impacted the behavioral intention to use

IS ($\beta=-0.295$, $p<0.003$). Thus, H3 is supported. Furthermore, FC was found to have a considerable impact on IS implementation in the university ($\beta=0.872$, $p<0$), and consequently, H2 is supported. Similarly, PE has positively influenced the behavioral intention to adopt University IS ($\beta=0.208$, $p<0.002$). As a result, H3 is supported.

Meanwhile, the outcomes emphasize that PU ($\beta=0.018$, $p>0.794$), SI ($\beta=0.076$, $p>0.223$), as well as PEOU ($\beta=0.075$, $p>0.229$), possess no impact on intentions to use IS. Therefore, H2 and H6 were ruled out. As demonstrated in Table 4, the R-squared value is 0.764, implying that when all nine variables are considered together, describing 76.4% of the variance in IS adoption through academic institutions.

5. Discussions

This paper discussed the determinants of the intention to use the IM system in the case of SU in Mogadishu, Somalia. The research used a hybrid of two well-known theories: The TAM as well as the UTAUT.

Table 3: Fornell-Larcker criterion

| | EE | FC | IS adoption | PE | PEOU | PU | SE |
|-------------|-------|-------|-------------|-------|-------|-------|-------|
| EE | 0.8 | | | | | | |
| FC | 0.837 | 0.848 | | | | | |
| IS adoption | 0.639 | 0.84 | 0.741 | | | | |
| PE | 0.572 | 0.611 | 0.647 | 0.775 | | | |
| PEOU | 0.588 | 0.591 | 0.562 | 0.511 | 0.745 | | |
| PU | 0.531 | 0.492 | 0.399 | 0.294 | 0.341 | 0.736 | |
| SE | 0.424 | 0.46 | 0.486 | 0.473 | 0.441 | 0.296 | 0.881 |

Table 4: Structural model-hypothesis testing

| Hs | Path relationship | Sample mean (M) | Standard deviation (STDEV) | t-value | P-values | Decision | R ² |
|----|-------------------|-----------------|----------------------------|---------|----------|---------------|----------------|
| 1 | EE -> IUOCMS | -0.294 | 0.096 | 3.051 | 0.002 | Supported | 0.764 |
| 2 | FC -> IUOCMS | 0.877 | 0.106 | 8.290 | 0 | Supported | |
| 3 | PE -> IUOCMS | 0.202 | 0.066 | 3.033 | 0.003 | Supported | |
| 4 | PEOU -> IUOCMS | 0.075 | 0.067 | 1.120 | 0.263 | Not Supported | |
| 5 | PU -> IUOCMS | 0.017 | 0.070 | 0.246 | 0.806 | Not Supported | |
| 6 | SE -> IUOCMS | 0.074 | 0.065 | 1.147 | 0.252 | Not Supported | |

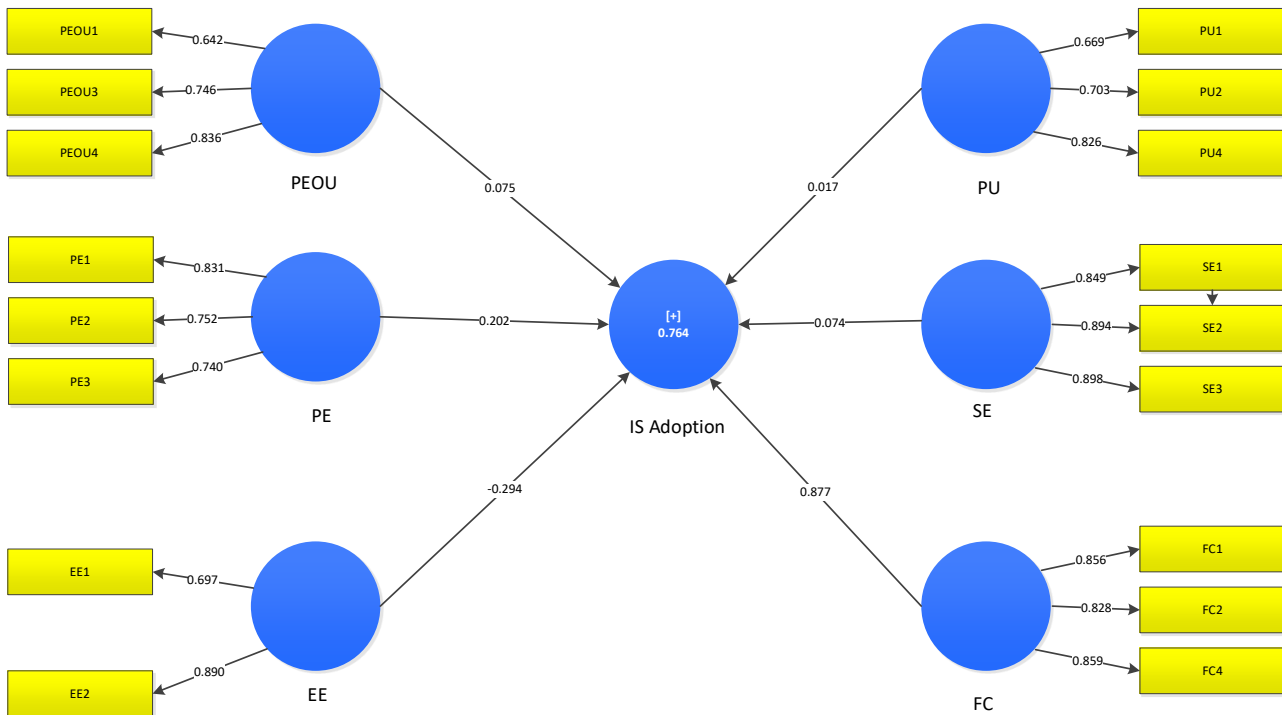


Fig. 2: Structural model

An online survey of 100 participants was demonstrated in this study and responded to by selected lecturers, students, and university staff. The results also showed that PE, EE, and FC had favorable effects on the intention to use IS. Subsequently, the results portrayed that IS possesses a negative impact on the association between PEOU, PU, and SI.

They also confirmed the research model that had been proposed. The parameters of the study are discussed in detail in the following sections.

The results of the study showed that PE possesses a significant positive effect on the intention to use IS. This corresponded to the findings of other studies (Šumak et al., 2017; Khalilzadeh et al., 2017; Venkatesh et al., 2003). PE in this study suggests that respondents are upbeat about their intentions to implement IS. Furthermore, empirical research discovers that the same factors affect consumers' interest in using and adopting technology's performance expectations (Min et al., 2008; Venkatesh et al., 2011) supports this view. Consequently, they are much more likely to want to establish an IS within their academic institutions. This finding suggests that expected PE is critical to IS implementation intentions.

Similarly, it was discovered that EE strongly impacted the adoption of IS. We revealed that EE is positively associated with the acceptance of an IS. The importance of EE is consistent with earlier research (Maillet et al., 2015; Shiau and Luo, 2013).

Additionally, supporting earlier findings, the study found that EE had a large and favorable impact on satisfaction with mobile learning. This indicates that m-learning is becoming a more significant way of instruction for students and will enable them to increase the effectiveness and performance of their learning, as well as their happiness with mobile learning (Chao, 2019). Other than that, the results indicate that EE is an important aspect, which means a positive influence exists in accepting IS.

Moreover, the study presented that the FC also impacts the high use of an IS. Hence, it significantly affects people's capacity to adopt the technology. Results from earlier research have demonstrated that FC is a crucial aspect affecting academic institutions' adoption of technologies (Puspitasari et al., 2019; Ghobakhloo et al., 2011). Thus, FC is considered a significant determinant in the adoption of IS.

In contrast, the outcomes emphasize that SI is an irrelevant factor, which means there is no positive impact on accepting IS. This is also consistent with earlier research, which discovered that the implementation of an integrated licensing service IS in Samarinda was not significantly influenced by SI (Puspitasari et al., 2019). Nevertheless, another study contradicts this result. It claims that SI significantly impacted the nurses' BI to adopt and use hospital electronic information management systems (HEIMS) in Ghanaian hospitals (Zhou et al., 2019). In addition, the results demonstrate that PU

significantly reduces the intention to use IS. Other related investigations reinforce this outcome (Koç et al., 2016) and exhibit insignificant PU and usage intention. However, a different study contradicts this finding; the PU possesses a substantial impact on accountants' employment of Computerized Accounting systems (CAS) in MSEs in Xi'an, Shaan Xi, China (Lanlan et al., 2019). Furthermore, PEOU's impact on IS usage intention has been insignificant. This result is consistent with Koç et al. (2016), who suggested that the user intentions to adopt the mobile Mobile Education Information System of Sakarya University (SABIS) are not significantly influenced by PU. This means that PEOU is unimportant in the user's intentions to adopt the IS.

6. Conclusions

Information and communication technology (ICT) application is an essential element of the educational learning process both inside and outside the classroom environment at educational institutions. It is important to note that while manual systems have created issues in some institutions, implementing IS has significantly boosted the university's business operations and productivity. A successful IT adoption plan for higher education institutions could solve this issue. This work's main contribution is an empirical examination of the TAM and UTAUT variables, which have been shown to affect IS acceptance at SU in Somalia. This research is designed to provide and assess a model that predicts how PE, effect expectancy (EE), FC, PU, and PEOU will determine the adoption of IS in higher education. Additionally, random sampling was used to acquire data from an online survey with 100 participants participating. Academic lecturers, students, and university personnel from SU responded to the questionnaire. With a greater understanding of the determinants of IS adoption in tertiary education, the staff, students, and senior management of academic institutions can all benefit from the study's findings. The study makes a contribution to Somalia's higher education, which has not gotten much attention in academic literature. Other than that, the findings indicated that PE, EE, and FC have favorable effects on one's intention to use IS, while IS was shown to have a negative impact on the relationships between PEOU, PU, and SI.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Abdulrazaq MB and Mustafa OM (2017). Designing and implementing of an online library management system.

Science Journal of University of Zakho, 5(3): 278-284. <https://doi.org/10.25271/2017.5.3.396>

Afonso CM, Roldán Salgueiro JL, Sánchez Franco MJ, and González MDLO (2012). The moderator role of gender in the unified theory of acceptance and use of technology (UTAUT): A study on users of electronic document management systems. In the 7th International Conference on Partial Least Squares and Related Methods, Houston, USA: 1-8.

Ayaz A and Yanartaş M (2020). An analysis on the unified theory of acceptance and use of technology theory (UTAUT): Acceptance of electronic document management system (EDMS). Computers in Human Behavior Reports, 2: 100032. <https://doi.org/10.1016/j.chbr.2020.100032>

Back WE and Moreau KA (2001). Information management strategies for project management. Project Management Journal, 32(1): 10-19. <https://doi.org/10.1177/875697280103200103>

Basri WS, Alandejani JA, and Almadani FM (2018). ICT adoption impact on students' academic performance: Evidence from Saudi universities. Education Research International, 2018: 1240197. <https://doi.org/10.1155/2018/1240197>

Buabeng-Andoh C and Baah C (2020). Pre-service teachers' intention to use learning management system: An integration of UTAUT and TAM. Interactive Technology and Smart Education, 17(4): 455-474. <https://doi.org/10.1108/ITSE-02-2020-0028>

Bygstad B, Øvrelid E, Ludvigsen S, and Dæhlen M (2022). From dual digitalization to digital learning space: Exploring the digital transformation of higher education. Computers and Education, 182: 104463. <https://doi.org/10.1016/j.compedu.2022.104463>

Chao CM (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. Frontiers in Psychology, 10: 1652. <https://doi.org/10.3389/fpsyg.2019.01652>
PMid:31379679 PMCID:PMC6646805

Chinyemba A and Ngulube P (2005). Managing records at higher education institutions: A case study of the University of KwaZulu-Natal, Pietermaritzburg Campus. South African Journal of Information Management, 7(1). <https://doi.org/10.4102/sajim.v7i1.250>

Chiu CM and Wang ET (2008). Understanding web-based learning continuance intention: The role of subjective task value. Information and Management, 45(3): 194-201. <https://doi.org/10.1016/j.im.2008.02.003>

Cobarsí J, Bernardo M, and Coenders G (2008). Campus information systems for students: Classification in Spain. Campus-Wide Information Systems, 25(1): 50-64. <https://doi.org/10.1108/10650740810849089>

Davis FD (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3): 319-340. <https://doi.org/10.2307/249008>

Duncombe R and Molla A (2009). Formalisation of information systems in sub-Saharan African small and medium enterprises: Case of Botswana. The African Journal of Information Systems, 1(2): 1-29.

Dwivedi YK, Hughes DL, Coombs C, Constantiou I, Duan Y, Edwards JS, and Upadhyay N (2020). Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life. International Journal of Information Management, 55: 102211. <https://doi.org/10.1016/j.ijinfomgt.2020.102211>

Egoeze F, Misra S, Maskeliūnas R, and Damaševičius R (2018). Impact of ICT on universities administrative services and management of students' records: ICT in university administration. International Journal of Human Capital and Information Technology Professionals (IJHCITP), 9(2): 1-15. <https://doi.org/10.4018/IJHCITP.2018040101>

- Elpez I and Fink D (2006). Information systems success in the public sector: Stakeholders' perspectives and emerging alignment model. *Informing Science: International Journal of an Emerging Transdiscipline*, 3: 219-231. <https://doi.org/10.28945/885>
- Fornell C and Larcker DF (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18(3): 382-388. <https://doi.org/10.1177/002224378101800313>
- Gefen D, Karahanna E, and Straub DW (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27(1): 51-90. <https://doi.org/10.2307/30036519>
- Ghobakhloo M, Arias-Aranda D, and Benitez-Amado J (2011). Adoption of e-commerce applications in SMEs. *Industrial Management and Data Systems*, 111(8): 1238-1269. <https://doi.org/10.1108/02635571111170785>
- Goodhue DL and Thompson RL (1995). Task-technology fit and individual performance. *MIS Quarterly*, 19(2): 213-236. <https://doi.org/10.2307/249689>
- Hair JF, Hult GTM, Ringle CM, and Sarstedt MA (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)*. 2nd Edition, SAGE Publications, Thousand Oaks, USA.
- Hamid AA, Razak FZA, Bakar AA, and Abdullah WSW (2016). The effects of perceived usefulness and perceived ease of use on continuance intention to use e-government. *Procedia Economics and Finance*, 35: 644-649. [https://doi.org/10.1016/S2212-5671\(16\)00079-4](https://doi.org/10.1016/S2212-5671(16)00079-4)
- Harwick J and Barki H (1994). Explaining the role of user participation in information systems use. *Management Science*, 40(4): 440-465. <https://doi.org/10.1287/mnsc.40.4.440>
- Hoque R and Sorwar G (2017). Understanding factors influencing the adoption of mHealth by the elderly: An extension of the UTAUT model. *International Journal of Medical Informatics*, 101: 75-84. <https://doi.org/10.1016/j.ijmedinf.2017.02.002> **PMid:28347450**
- Kaul S (2006). Higher education in India: Seizing the opportunity. *Development Economics Working Papers 22169*, Indian Council for Research on International Economic Relations, New Delhi, India.
- Khalilzadeh J, Ozturk AB, and Bilgihan A (2017). Security-related factors in extended UTAUT model for NFC based mobile payment in the restaurant industry. *Computers in Human Behavior*, 70: 460-474. <https://doi.org/10.1016/j.chb.2017.01.001>
- Koç T, Turan AH, and Okursoy A (2016). Acceptance and usage of a mobile information system in higher education: An empirical study with structural equation modeling. *The International Journal of Management Education*, 14(3): 286-300. <https://doi.org/10.1016/j.ijme.2016.06.001>
- Lanlan Z, Ahmi A, and Popoola OMJ (2019). Perceived ease of use, perceived usefulness and the usage of computerized accounting systems: A performance of micro and small enterprises (MSES) in China. *International Journal of Recent Technology and Engineering*, 8(2): 324-331. <https://doi.org/10.35940/ijrte.B1056.0782S219>
- Lawrence JE (2015). Examining the factors that influence ICT adoption in SMEs: A research preliminary findings. *International Journal of Technology Diffusion*, 6(4): 40-57. <https://doi.org/10.4018/IJTD.2015100103>
- Li H and Liu Y (2014). Understanding post-adoption behaviors of e-service users in the context of online travel services. *Information and Management*, 51(8): 1043-1052. <https://doi.org/10.1016/j.im.2014.07.004>
- Livingstone S (2012). Critical reflections on the benefits of ICT in education. *Oxford Review of Education*, 38(1): 9-24. <https://doi.org/10.1080/03054985.2011.577938>
- Macevičiūtė E and Wilson TD (2002). The development of the information management research area. *Information Research*, 7(3). Available online at: <https://informationr.net/ir/7-3/paper133.html>
- Maillet É, Mathieu L, and Sicotte C (2015). Modeling factors explaining the acceptance, actual use and satisfaction of nurses using an electronic patient record in acute care settings: An extension of the UTAUT. *International Journal of Medical Informatics*, 84(1): 36-47. <https://doi.org/10.1016/j.ijmedinf.2014.09.004> **PMid:25288192**
- Malhotra R, Kumar D, and Gupta DP (2020). An android application for campus information system. *Procedia Computer Science*, 172: 863-868. <https://doi.org/10.1016/j.procs.2020.05.124>
- Min Q, Ji S, and Qu G (2008). Mobile commerce user acceptance study in China: A revised UTAUT model. *Tsinghua Science and Technology*, 13(3): 257-264. [https://doi.org/10.1016/S1007-0214\(08\)70042-7](https://doi.org/10.1016/S1007-0214(08)70042-7)
- Mou J and Cohen JF (2017). Trust and online consumer health service success: A longitudinal study. *Information Development*, 33(2): 169-189. <https://doi.org/10.1177/0266666916642507>
- Nag AK and Gilitwala B (2019). E-Wallet-factors affecting its intention to use. *International Journal of Recent Technology and Engineering*, 8(4): 3411-3415. <https://doi.org/10.35940/ijrte.D6756.118419>
- Park N, Rhoads M, Hou J, and Lee KM (2014). Understanding the acceptance of teleconferencing systems among employees: An extension of the technology acceptance model. *Computers in Human Behavior*, 39: 118-127. <https://doi.org/10.1016/j.chb.2014.05.048>
- Pinho C, Franco M, and Mendes L (2018). Web portals as tools to support information management in higher education institutions: A systematic literature review. *International Journal of Information Management*, 41: 80-92. <https://doi.org/10.1016/j.ijinfomgt.2018.04.002>
- Pollock N and Cornford J (2004). ERP systems and the university as a "unique" organization. *Information Technology and People*, 17(1): 31-52. <https://doi.org/10.1108/09593840410522161>
- Prajogo D, Toy J, Bhattacharya A, Oke A, and Cheng TCE (2018). The relationships between information management, process management and operational performance: Internal and external contexts. *International Journal of Production Economics*, 199: 95-103. <https://doi.org/10.1016/j.ijpe.2018.02.019>
- Puspitasari N, Firdaus MB, Haris CA, and Setyadi HJ (2019). An application of the UTAUT model for analysis of adoption of integrated license service information system. *Procedia Computer Science*, 161: 57-65. <https://doi.org/10.1016/j.procs.2019.11.099>
- Rothnie L (1993). Campus wide information system development at three UK universities. *VINE*, 23(4): 18-30. <https://doi.org/10.1108/eb040515>
- Samsudeen SN and Mohamed R (2019). University students' intention to use e-learning systems: A study of higher educational institutions in Sri Lanka. *Interactive Technology and Smart Education*, 16(3): 219-238. <https://doi.org/10.1108/ITSE-11-2018-0092>
- Sanchez-Puchol F, Pastor-Collado JA, and Borrell B (2017). Towards an unified information systems reference model for higher education institutions. *Procedia Computer Science*, 121: 542-553. <https://doi.org/10.1016/j.procs.2017.11.072>
- Shiau WL and Luo MM (2013). Continuance intention of blog users: The impact of perceived enjoyment, habit, user involvement and blogging time. *Behaviour and Information Technology*, 32(6): 570-583. <https://doi.org/10.1080/0144929X.2012.671851>

- Straub D, Boudreau M, and Gefen D (2004). Validation guidelines for IS positivist research. *Communications of the Association for Information Systems*, 13: 24.
<https://doi.org/10.17705/1CAIS.01324>
- Šumak B, Pušnik M, Heričko M, and Šorgo A (2017). Differences between prospective, existing, and former users of interactive whiteboards on external factors affecting their adoption, usage and abandonment. *Computers in Human Behavior*, 72: 733-756. <https://doi.org/10.1016/j.chb.2016.09.006>
- Tosuntaş ŞB, Karadağ E, and Orhan S (2015). The factors affecting acceptance and use of interactive whiteboard within the scope of FATIH project: A structural equation model based on the Unified Theory of acceptance and use of technology. *Computers and Education*, 81: 169-178.
<https://doi.org/10.1016/j.compedu.2014.10.009>
- Venkatesh V, Morris MG, Davis GB, and Davis FD (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3): 425-478.
<https://doi.org/10.2307/30036540>
- Venkatesh V, Sykes TA, and Zhang X (2011). 'Just what the doctor ordered': A revised UTAUT for EMR system adoption and use by doctors. In the 44th Hawaii International Conference on System Sciences, IEEE, Kauai, USA: 1-10.
<https://doi.org/10.1109/HICSS.2011.1> **PMid:20972605**
- Wong KT, Russo S, and McDowall J (2013). Understanding early childhood student teachers' acceptance and use of interactive whiteboard. *Campus-Wide Information Systems*, 30(1): 4-16.
<https://doi.org/10.1108/10650741311288788>
- Zhou LL, Owusu-Marfo J, Asante Antwi H, Antwi MO, Kachie ADT, and Ampon-Wireko S (2019). Assessment of the social influence and facilitating conditions that support nurses' adoption of hospital electronic information management systems (HEIMS) in Ghana using the unified theory of acceptance and use of technology (UTAUT) model. *BMC Medical Informatics and Decision Making*, 19: 230.
<https://doi.org/10.1186/s12911-019-0956-z>
PMid:31752840 PMCID:PMC6873399