
**Management Information System (MIS): A Panacea towards Administrative Delay in
Nigeria Tertiary Institutions**

BY

**Bashir IDRIS¹, Lawali YAU², Zuwaira Ali FALALU², Abdullahi Suleiman JELANI²,
Lawali KARAMI², Nasiru AHMED² & Sani IBRAHIM¹**

**¹Department of Computer Science,
Federal College of Education (Technical), Gusau, Zamfara State;**

**²Department of Secretarial Studies,
Federal College of Education (Technical), Gusau, Zamfara State**

ABSTRACT

The process of acquiring education is always changing to depict contemporary educational methodologies and technological innovations. The increasing prevalence of technological innovations has rescued so much of the boredom, experienced by many educators and learners from administrative delay. Management Information System (MIS) as one of the innovative technologies, contributed so much in reducing school administrative frustrations and delay, such as administrative delay in access to official records, student records mismanagement among others. The adoption of MIS in universities and colleges has been observed to have reduced effort and improve performance in administrative correspondences in tertiary institutions in Nigeria. MIS system usually provides a database of the institution's records (especially students, staff and financial records) with efficient ease of access to the entire record, it also guarantees an appropriate administrative manipulation of these records based on the demand of the institutions. This paper intends to examine the perception of administrators on the adoption of MIS in various tertiary institutions in the North-West, Nigeria, the research focus on the extent to which MIS influence administrators in their official administrative engagements, which in turn improve MIS acceptance and use among administrators. The research employed the use of Unified Theory of Acceptance and Use of Technology (UTAUT) as a fundamental theory for the study. 265 administrators participated in the survey. Structural Equation Modelling-Partial Least Square (PLS-SEM) was used for the analysis of the data collected. The loadings (0.7), AVE (0.5) and composite reliabilities (0.7) all exceeded the recommended values. This, therefore, indicated enough convergent validity of the data collected and analysed. Inferences were drawn, and recommendations were also provided by the researchers based on the result obtained from the analysis. The finding of the research indicated that performance expectancy (PE), effort expectancy (EE) and social influence (SI) significantly influence behavioural intention (BI). While behavioural intention strongly influences the use behaviours (UB) of administrator in the adoption of MIS in the North-West of Nigeria. MIS is therefore strongly recommended to be deployed or be improved in the tertiary institutions to ensure administrative performance and safety of information.

KEYWORDS: Nigeria, MIS, UTAUT, Administrators, Tertiary Institutions, PLS-SEM

Introduction

Education is composed as the central component of any nation's development life cycle, which may be facilitated through the provision of, a clear definition, legislative protection, and ownership by relevant stakeholders, adequate funding, as well as expert's periodic consultations to technically review and ensure homogeneity at both local and global needs (Ojiambo, 2009). Education also remains a very basic indicator of human development. It is also a crucial factor in determining the quality of human life (Akal, Box, & Margaret, 2013). Education is a lifelong process that begins from simple to a very complex form. At each educational level, a variety of information is captured and preserved. The process of acquiring and managing the information of all the processing activities including student's profile and maintain each piece of information has been a source of concern to each institution across the globe. The advent of information and communication technology (ICT) has drastically reduced the bottleneck on the notion of keeping records in the physical file in stores and offices file cabinets.

The recent technology infusion into the contemporary education sectors has caused the traditional method of classroom participation and communication to change. In this context, the use of electronic means of records processing is increasingly prevalent in many higher educational institutions (HEIs) in Nigeria. Management information system shortens as MIS exists because of computer technology. MIS is being used by academic environments provides a range of administrative activities including students' academic records, attendance, assessment, staff and financial records (Shah, 2014). MIS has the potential to provide adequate information to manage the entire organisation or institutions. It plays a very important role in the area of decision making as it supports the retrieval of various information from the database. To provide a detailed understanding of the MIS, it often requires the components to be defined separately. Management is considered as the process of planning, organising, initiating and controlling the operations within an institution or organisation (Bright & Asare, 2019). Information refers to as processed data that has been to be more meaningful to the users while the system entails the process of bringing related components together to make a whole (Bright & Asare, 2019). MIS as a system was designed to facilitate the information processing ability in an organisation. With the technology diffusion into the organizational setting, MIS plays a vital role in higher education institutions by bringing together all forms of information being academic or non-academic at the desk of the administrators in an institution. Acceptance of and use on the adoption of such technology can be traced through different information system models.

According to Masrom & Teknologi, (2007) the diffusion of ICT has been studied lately by researchers in information systems research. The study looked at information systems mostly at two distinct levels: first at an organisational level and second at the individual level. If the unit analysis is at the individual level the study will focus more on the acceptance and adoption of the new technology. In information system research, respondent's attitudes towards using the system as well as the actual usage are addressed in technology acceptance model (TAM) (Davis, Bagozzi, & Warshaw, 1989) and/or predicting user acceptance of computer technology (Lin, Keller, & Lin, 2014). It has been used as the theoretical basis for many empirical studies of user technology acceptance (Adams, Nelson, & Todd, 1992). Technology acceptance was defined as "an individual's psychological state concerning his or her voluntary or intended use of a particular technology" (Walters, Hoffman, Hendrick, & Humphreys, 1984). Examination Performance in (Akal, Box, & Margaret, 2013), students' perceptions of e-registration (Adio & Olasina, 2007). As at the time of this research no research has been found in the literature that investigated the

perceptions of administrators towards the adoption of management information system (MIS) in the Nigerian tertiary institutions. In this research Unified theory of acceptance and use of technology (UTAUT) was adopted to investigate the administrator's perceptions on the adoption of management information system (MIS) in the Nigerian tertiary education with north-western Nigeria as a case study. The research presented here is motivated and guided by two main questions. First, do administrators like to accept MIS? Second, what are the factors that are significant in explaining the administrator's intention towards using MIS? In other words, this study examined the construct of UTAUT within the administrative area. The model was deployed in other areas such as Information Technology and Infrastructure Library (ITIL) (Ahmad, Amer, Qutaifan, & Alhilali, 2013), factors determining the behavioural intention to use mobile learning (Chao, 2019), Factors Determining the Use of the Clinical care Module by Nurses (Zhou, Herselman, & Coleman, 2016) Understanding Nurse Perceptions of a Newly Implemented Electronic Medical Record System (Holtz & Krein, 2011), Factors Influencing Professionals' Decision for Cloud Computing Adoption (Mathur & Dhulla, 2014), Examining factors affecting the adoption and usage of document workflow management system (Mosweu, Bwalya, & Mutshewa, 2016)

Statement of the Problem

The advent of information technology (ICT) has eliminated the bottleneck associated with the process of capturing, managing and processing information in higher education institutions. In this context, the use of a management information system (MIS) has been increasingly adopted in many higher educational institutions all over the world. One major objective of MIS is the provision of opportunity for information manipulation to efficiently be used for proper decision making.

However, the problem of information mismanagement, students' academic records misplacement, inaccuracy, inefficiency in time management, associated with the manual record-keeping process has been prevalent in some Nigerian tertiary institution. The advent of ICT has automated the process of information management and do away the traditional manual information processing. Over time, institutions have engaged in the adopting the management information system in managing the institution's information. This paper investigates whether the adoption of MIS has influence the performance of administrators in the discharge of their administrative duties in managing the institution's information.

Theoretical Framework

Venkatesh, Moris, Davis & Davis (2003) developed a Unified Theory of Acceptance and Use of Technology (UTAUT) as an extension or integration of the eight known theories in the information system research. The theory incorporates more other important factors (variables) that predict user acceptance and use of technology. Venkatesh has extensively reviewed and compared eight models of acceptance (Venkatesh et al., 2003) which includes the theory of reasoned action (TRA), technology acceptance model (TAM), motivational model (MM), the theory of planned behaviour (TPB), the model of PC utilization (MPCU), innovation diffusion theory (IDT), combined TAM and TPB (C TAM-TPB) and social cognitive theory (SCT). With a combined idea of an in-depth understanding of the above models, Venkatesh resulted in a new model (UTAUT) which is characterised with all the features of the theories he reviewed in the IS research. UTAUT can explain about 70% of the variance, thus provides a useful tool for managers to assess the likelihood of success for the new technology introduced. Venkatesh et al further encouraged others to continue validating and testing their model using different technology and context, also identifying new

constructs that can add to the prediction of IS intention (Venkatesh et al., 2003). UTAUT has four direct determinants of behavioural intention and use behaviour: performance expectancy, effort expectancy, social influence and facilitating conditions. UTAUT also has four moderators that are found to mediate the effects of the four key determinants on usage intention and behaviour.

Our definition of the constructs was being conceptualised to management information system (MIS) as adapted from the original UTAUT towards MIS acceptance and use by tertiary institution’s administrators. Performance expectancy is defined as the degree to which using e-registration will provide benefits to administrators in their administrative job; effort expectancy is the degree of ease associated with administrators' use of management information system (MIS) in their administrative activities; social influence is the extent to which administrators perceive that important others (e.g., other institutions, organisation) believe that they should use e-registration in their registration process; and facilitating conditions refer to administrator’s perceptions of the resources and support available for them in the sue of management information system (MIS) in their institutions (e.g. Brown and Venkatesh 2005; Venkatesh et al. 2003). According to UTAUT, performance expectancy, effort expectancy, and social influence are theorized to influence behavioural intention to use technology, while behavioural intention determines the technology use.

Research Model:

This paper examines the influence of MIS towards the administrative performance of administrators in various institutions in North-west Nigeria. The paper focuses on three constructs of the original UTAUT model excluding the use of facilitating condition. The paper uses effort expectancy (EE), performance expectancy (PE) and social influence (SI), to examine the technology use. Based on the above assessments the following depict the research model and hypothesis.

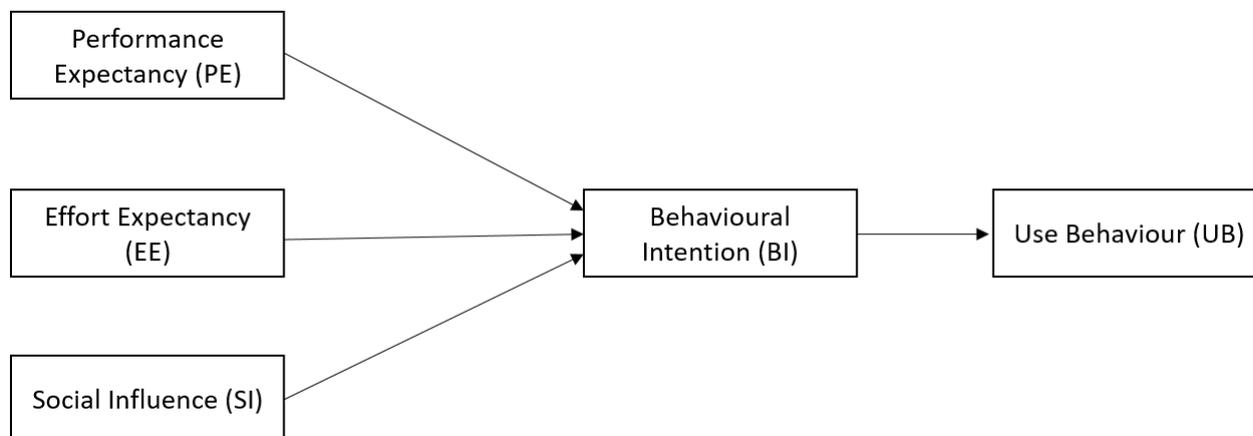


Figure 1: Research Model

Research Hypotheses

- H₁:** Performance expectancy significantly influences user behavioural intention to use management information system (MIS)
- H₂:** Effort expectancy significantly influences user behavioural intention to use management information system (MIS)
- H₃:** Social Influence significantly affects user behavioural intention to use management

information system (MIS)

H₄: Behavioural intention significantly influences user behavioural intention to adopt a management information system (MIS)

Research Methodology

Instrumentation

The research instrument used was a survey questionnaire; the questionnaire was chosen because due to its appropriateness to the survey type study. The questionnaire was adapted from the previous literature such as (Ain, Kaur, & Waheed, 2016) the influence of the value of learning management system use, (Wills, El-Gayar, & Benett, 2008) electronic medical record, and (Marchewka, Liu, & Kostiwa, 2007) course management software. The instrument was designed using a 7-point Likert scale.

Sample and respondents profile

Eight (8) tertiary institutions were selected across the North-West zone (Sokoto, Kebbi, Zamfara, Katsina, Kano, and Jigawa) of Nigeria to participate in the study. The research measures the perceptions of administrators who were directly engaged in using the management information system (MIS) in the selected tertiary institutions. Hence, purposive sampling technique was employed to select the participants of the study. The respondents comprise of staff of various departments such as MIS units, deans of faculties, head of departments, school officers as well as clerical officers. The respondents were staff of the various institutions who were engaged in administrative activities. The respondents of the research all together were 265, out of which 181 were validly returned and analysed.

Analysis of Strategy

The data analysis was conducted using partial least square (Smart PLS 3) on the platform of structural equation modelling (PLS-SEM). The approach of PLS-SEM is used to examine the relationship among variables as it is noted to be a causal model and a variance-based (Henseler, Hubona, & Ray, 2016). In research that uses PLS-SEM to analyse its data, the measurement model (inner model) and the structural model (outer model) are used to analyse and interpret the result (Henseler et al., 2016). The outer model is used to measure the relationship between latent variables and their correspondent indicators with a focus on the reliability and validity of the relationships. While the inner model measures the relationship between the exogenous and endogenous variables while observing the degree of R^2 , F^2 , Q^2 and the hypothetical significance (Hair et al., 2014). The bootstrapping result is also a good measure of testing the significance of the path coefficients and loadings.

Result

Measurement Model (outer model):

When examining a measurement of a model, two main types of measurement are used, such as convergent and discriminant validity. Convergent validity can be assessed through the assessment of the reliability in the item loadings, average variance extracted (AVE) and composite reliabilities (Joseph F. Hair, Ringle, & Sarstedt, 2013). Table I below reported that the loadings (0.7), AVE (0.5) and composite reliabilities (0.7) all exceeded the recommended values, this entails an indication that there is enough convergent validity (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). To assess the discriminant validity, (Fornell & Larcker,

1981), suggested that the square root of AVE should be greater than the correlation of the constructs with all other constructs in the structural model. Discriminant Validity using Fornell and Lacker Criterion have been tested and are satisfied.

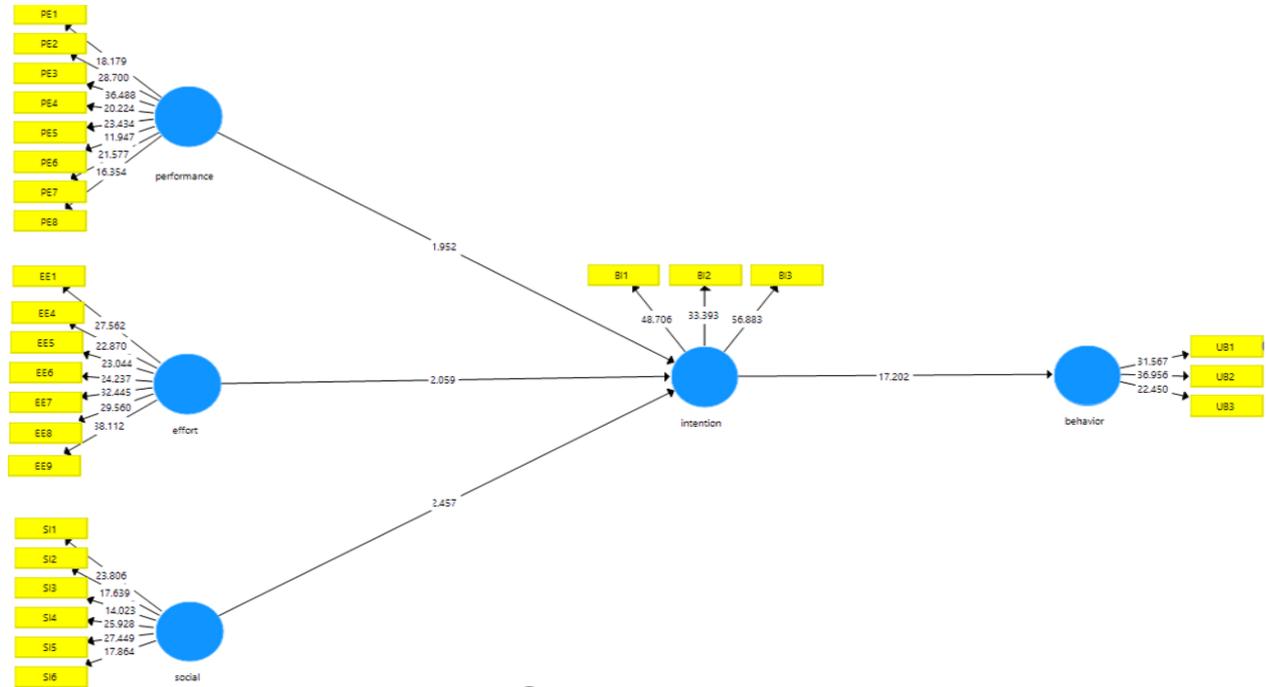


Figure 2: Measurement Model

Table 1: Loadings, AVE and Composite Reliability

Construct	Item	Loadings	AVE	CR			
Performance Expectancy	PE1	0.785	0.677	0.943			
	PE2	0.873					
	PE3	0.889					
	PE4	0.821					
	PE5	0.827					
	PE6	0.720					
	PE7	0.843					
	PE8	0.811					
Effort Expectancy	EE1	0.829	0.727	0.949			
	EE4	0.828					
	EE5	0.857					
	EE6	0.845					
	EE7	0.886					
	EE8	0.847					
	EE9	0.873					
	Social Influence	SI1			0.828	0.645	0.916
		SI2			0.776		
SI3		0.762					
SI4		0.836					
SI5		0.840					
SI6		0.772					
Behavioural Intention	BI1	0.914	0.829	0.936			
	BI2	0.899					
	BI3	0.918					
Use Behavioural	UB1	0.856	0.744	0.897			
	UB2	0.880					
	UB3	0.852					

Notes: EE2, EE3, EE10, SI7 and SI8 were deleted due to low loading.

Structural Model (inner model)

The assessment of the inner model or the structural model is based on the result obtained from R^2 , beta value, and significance of the t-value. This is usually achieved by performing a bootstrapping procedure with 5,000 samples according to (Hair et al., 2014). To assess the structural model in this paper, we subjected three predictor variables (PE, EE, and SI) to PLS-SEM analysis as the independent variables and one mediator dependent variable, which in turn assess and examined the four predictors of administrator's use behaviour to adopt management information system (MIS). Three independents variables predicted user behavioural intention through PE, EE and SI while behavioural intention predicted use behaviour of the system. Our PLS-SEM result as reported in Table 3 below, indicated that the path coefficients for the hypothesized linkages are all positive and statistically significant ($p < 0.01$; $p < 0.05$). Specifically, the relationships between performance expectancy (PE) and behavioural intention (BI) ($\beta = 0.291$, $T = 1.952$, $p < 0.01$), between effort expectancy (EE) and behavioural intention (BI) ($\beta = 0.342$, $T = 2.059$, $p < 0.01$), between Social Influence (SI) and behavioural intention (BI) ($\beta = 0.193$, $T = 2.457$, $p < 0.05$) are all statistically significant, thereby supporting H1, H2, and H3, as well as explaining 59.9 per cent variance in behavioural intention (Table 4). Also, between behavioural intention (BI) and use behaviour (UB) ($\beta = 0.800$, $T = 17.202$, $p < 0.05$) which is also statistically significant and supports H4, as well explained 64.1 per cent variance in use behaviour (Table 4).

(the beta values must be at least 0.1 for the hypothesis to be significant, while for t-values must be at least 1.95).

Table 3: Hypothesis Testing

Hypothesis Relationship	Relationship	std Beta	std Error	t-value	p-value	Decision
H1	PE->Intention	0.291	0.149	1.952*	0.01	Supported
H2	EE->Intention	0.342	0.166	2.059*	0.01	Supported
H3	SI->Intention	0.193	0.079	2.459**	0.00	Supported
H4	BI->UB	0.800	0.035	17.202**	0.00	Supported

Notes: ** $p < 0.01$, * $p < 0.05$

Table 4: Coefficient of Determination (R^2 Values)

	PE	EE	SI	BI	UB
BI				0.599	
UB					0.641

Discussion

In this paper, we examine the potentials predictors of administrator's behavioural intention and use behaviour of MIS in tertiary institutions using PLS-SEM of surveyed data. This research hypothesised that effort expectancy, performance expectancy and social influence has a significant effect on the administrator's behavioural intention and use behaviour in the

adoption and use of management information system (MIS). This finding is in line with the finding in (Ghalandari, 2012) who investigated the effect of performance expectancy, effort expectancy, social influence and facilitating condition on the adoption of e-Banking, the result indicated a significant effect on user behaviour and intention. Similarly, (Kim, Lee, Hwang, & Yoo, 2016) investigated the user acceptance in the adoption of a new system (EMR) using UTAUT, the result indicated a highly significant influence on intention to adopt the system by both the doctors and nurses. (Liu et al., 2015), also investigated factors that determine therapist acceptance of new technology for rehabilitation using UTAUT, the result indicated that user behavioural intention was strongly influenced by the performance expectancy, and use behaviour was influenced as well by the user behavioural intention and facilitating condition. Similarly, this research investigated the administrator's perceptions on the adoption of MIS in the affected tertiary institutions, the research focuses on finding out the extent to which performance expectancy, effort expectancy and social influence significantly affects the administrator behavioural intention and use behaviour. The result indicated that performance expectancy, effort expectancy and social condition influence significantly behavioural intention. While behavioural intention strongly influences the user behaviours of administrator in the adoption of MIS in the North-West of Nigeria.

Conclusion and Future Direction

This research finding offers a systematic point of interest to the research community by further validating the UTAUT construct (PE, EE, SI, BI, and UB), it also established a premise on the importance of MIS adoption in predicting perceived administrator's behavioural intention to use MIS and the actual usage behaviour. This also entails that administrators who engaged in MIS usage will have the ability to perform better with less effort. This finding also indicates that administrators with strong intention to adopt the system would eventually develop strong use behaviour of the system. We, therefore, recommend that the future direction of research should test this model by moderating the role of location, gender and age of administrators to see how it will affect the adoption of MIS.

Recommendations

Based on the above findings, it was recommended that:

1. The model is suitable and should be used to study information system in a diverse dimension.
2. MIS should be deployed in every tertiary institution of learning to improve the administrator's performance.
3. With the competitive advantage in the global marketing and education, MIS can improve client loyalty, due to multitasking, safety and security of individual and organisation information within the institution.

Acknowledgement

This material is based upon work supported by the Tertiary Institution Trusfund (TETFund) through FCET Gusau Research Grant. Any opinion, finding, and conclusion or recommendation expressed in this material are those of the authors and do not necessarily reflect the views of the TETFund and FCET.

REFERENCES

- Ain, N. U., Kaur, K., & Waheed, M. (2016). The influence of learning value on learning management system use: An extension of UTAUT2. *Information Development*, 32(5), 1306–1321. <https://doi.org/10.1177/0266666915597546>
- Akal, T., Box, P. O., & Margaret, A. (2013). Effect of Online Registration on Exam Performance in Kenya Certificate of Secondary Education Enrolment. *A Case of Sotik District, Kenya*. 3(7), 117–127.
- Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS quarterly*, 227-247.
- Adio, G., & Olasina, G. (2007). *The role of the library in educational development*. University of Technology, Ogbomosho.
- Bright, A. A., & Asare, G. (2019). *The Impact of Management Information System on the University of Education Winneba, Kumasi Campus-Ghana*. 7(1), 1–20.
- Brown, S. A., & Venkatesh, V. (2005). Model of adoption of technology in households: A baseline model test and extension incorporating household life cycle. *MIS quarterly*, 399-426.
- 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. <https://doi.org/10.1287/mnsc.35.8.982>
- Fornell, C., & Larcker, D. F. (1981). SEM with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18(1), pp. 382–388.
- Ghalandari, K. (2012). The Effect of Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions on Acceptance of E-Banking Services in Iran: *The Moderating Role of Age and Gender*. 12(6), 801–807. Available at: <https://doi.org/10.5829/idosi.mejsr.2012.12.6.2536>
- Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modelling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2), 106–121. <https://doi.org/10.1108/EBR-10-2013-0128>
- Hair, Joseph F., Ringle, C. M., & Sarstedt, M. (2013). Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance. *Long Range Planning*, 46(1–2), 1–12. <https://doi.org/10.1016/j.lrp.2013.01.001>
- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modelling in new technology research: updated guidelines. *Industrial Management and Data Systems*, 116(1), 2–20. <https://doi.org/10.1108/IMDS-09-2015-0382>
- Holtz, B., & Krein, S. (2011). Understanding nurse perceptions of a newly implemented electronic medical record system. *Journal of Technology in Human Services*, 29(4), 247-262.

- Irani, Z., Ahmad, N., Amer, N. T., Qutaifan, F., & Alhilali, A. (2013). Technology adoption model and a road map to a successful implementation of ITIL. *Journal of Enterprise Information Management*.
- Kim, S., Lee, K. H., Hwang, H., & Yoo, S. (2016). Analysis of the factors influencing healthcare professionals' adoption of the mobile electronic medical record (EMR) using the unified theory of acceptance and use of technology (UTAUT) in a tertiary hospital. *BMC Medical Informatics and Decision Making*, 16(1), 1–12. <https://doi.org/10.1186/s129117>
- Lin, R., Keller, C., & Lin, R. (2014). *Understanding the adoption of third-party online payment*. (May).
- Liu, L., Miguel Cruz, A., Rios Rincon, A., Buttar, V., Ranson, Q., & Goertzen, D. (2015). What factors determine therapists' acceptance of new technologies for rehabilitation-a study using the Unified Theory of Acceptance and Use of Technology (UTAUT). *Disability and Rehabilitation*, 37(5), 447–455. Available at: <https://doi.org/10.3109/09638288.2014.923529>
- Marchewka, J. T., Liu, C., & Kostiwa, K. (2007). An application of the UTAUT model for understanding student perceptions. *The International Information Management Association*, 7(2).
- Masrom, M., & Teknologi, U. (2007). *Technology Acceptance Model and E-learning*. (May), 1–10.
- Mosweu, O., Bwalya, K., & Mutshewa, A. (2016). Examining factors affecting the adoption and usage of Document Workflow Management System (DWMS) using the UTAUT model. *Records Management Journal*.
- Ojiambo, P. O. (2009). Quality of Education and its Role in National Development: A Case study of Kenya's Education Reforms. *Kenya Studies Review*, 1(1), 133–149.
- Shah, M. (2014). Impact of Management Information Systems (MIS) on School Administration: What the Literature Says. *Procedia - Social and Behavioral Sciences*, 116(1), 2799–2804. Available at: <https://doi.org/10.1016/j.sbspro.2014.01.659>
- Venkatesh, V., Moris, M. G., Davis, G. B., & Davis, F. D. (2003). *User acceptance of information technology: Toward a unified view*. MIS quarterly.
- Wills, M. J., El-Gayar, O. F., & Benett, D. (2008). Examining healthcare professionals' acceptance of electronic medical records using UTAUT. *Issues in Information Systems*, 9(2), 396–401. Available at: <https://doi.org/10.1038/nature14019>
- Walters, B. C., Hoffman, H. J., Hendrick, E. B., & Humphreys, R. P. (1984). Cerebrospinal fluid shunt infection: Influences on initial management and subsequent outcome. *Journal of neurosurgery*, 60(5), 1014-1021.
- Zhou, M., Herselman, M. E., & Coleman, A. (2016). *Investigating factors determining the use of the clinical care module by nurses through the UTAUT model*.