

A Framework for the Adoption of Knowledge Management System (KMS) in University of Jos, Nigeria

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Abstract: KMS are information technology (IT) systems that manage the knowledge of organizations, these systems aid organizations generate new knowledge, record, utilize and allocate knowledge. This study examines the adoption of knowledge management systems at the University of Jos. Centred on the UTAUT2 theory, this study puts forth a framework and then investigates its constructs to explain individual's behavioural intentions to adopt knowledge management system. This work also examines the moderating effects of individualism/Collectivism at individual level on knowledge management system adoption. Data was gathered from staff and faculty of the University of Jos using an online questionnaire. The collected data was analyzed using SPSS to perform an exploratory factor analysis. AMOS was then used to test the model fit and the proposed hypothesis of the research by conducting a confirmatory factor analysis test. The findings of this study showed that performance expectancy, hedonic motivation are important factors that explained individual's behavioural intention to adopt knowledge management system. The results from this study also showed the impact of habit and facilitating condition on use behaviour. The result also showed that the moderating effect of individualism/collectivism at individual level on knowledge management system adoption was significant. Implications and future research works are presented and explained

Keywords: knowledge management system, learning management system, information systems, information technology, computer systems.

I. INTRODUCTION

“Knowledge is power” it is an indispensable asset to individuals and organisations. Proper management of knowledge by organisations and institutions has led to increased efficiency of business processes of such organisations (Alavi & Leidner, 2001; Becerra-Fernandez & Sabherwal, 2010). Knowledge management simply means performing necessary tasks to make the most of the available resources in an organisation (Anak, 2014), while Knowledge management systems (KMS) are the information technology that aid the management of these resources (Dehghani & Ramsin, 2015).

Knowledge management does not only imply the management of resources but the applying, capturing and sharing of these knowledge resources (Lee, Gon Kim, & Kim, 2012). With the help of KMS, the overall goal of organisations is to efficiently manage their knowledge resource in order for new knowledge to be created (Gulnaz & Tatiana, 2014). To do this, understanding the difference between data, information and Knowledge is crucial. Also, knowing the right knowledge or knowledge resources to manage is key (Alavi & Leidner, 2001). Generally, the knowledge found in organisations needs to be utilized in the processes and services of those organisations, because finding the right kind of knowledge, in the right form would facilitate creativity which leads to maintaining competitive advantage (Bhatt, 2007).

With the constant change in this technological age, one of the best ways for organizations to ensure that they stay above their competitors is to manage their knowledge assets (Basten, Bjoern, & Mahmut, 2015; Mulyono & Kristianto, 2013). Organizational knowledge is found in the individuals of the organization and most of this knowledge is tacit in nature and is not easily shared with other members of the organization (Anak, 2014). Furthermore, this knowledge could be lost easily when the members leave the organization or retire (Anak, 2014; Yang & Farn, 2009). Therefore, finding the most effective way to store and manage this knowledge is very crucial. While the implementation and use of KMS by some of these organisations have helped to increase the efficiency and creativity of these organisations, the rate of adoption of these systems is still low (Wagner & Bolloju, 2005). This could be due to the fact that KMS is a long-term investment and results are not seen instantly but over the years. Research has also shown that low adoption rate of KMS could also be attributed to an unwillingness to share knowledge (Goh & Sandhu, 2013; Muhammad, 2011). Other factors include cultural value and ease of use of the system (Hossain, Ouedraogo, & Rezanian, 2013). In developing countries, the rate of KMS adoption is also low due to the aforementioned factors.

Institutions of higher education are considered as banks of knowledge (Sugiarti, 2014), there are close to no literature on

KMS adoption in institutes of higher education, especially in developing countries. Most of the literature focuses on the adoption and acceptance of KMS in organisations (Khanam & Mahfuz, 2017). Other literatures focus on the implementation and factors that affect the successful implementation of KMS (Panigrahi et al., 2014; Tjong & Adi, 2016). There is a need for adoption studies on KMS in the institution of higher education, adoption studies help these institutions determine the key issues influencing the usage of these systems. While these institutions use learning management systems (LMS) to manage their academic knowledge, KMS have an advantage over LMS as they allow access to prior data and information that is not recognized as knowledge by LMS (Tjong & Adi, 2016).

This study aims to investigate and explore the factors that affect the adoption of KMS in the University of Jos since most literature in higher educational institutions focus on implementation. Also, institutes of higher education need to be mindful of the fact that other sections apart from the academic section are also banks of knowledge and require management of their knowledge assets. This study would look at the adoption of KMS in the University of Jos at the individual level.

The organization of the paper is as follows. Section 2 discusses related work. Section 3 described the research methodology used for this study while Section 4 presents the analyses of data findings. Finally Section 5 contains the discussion, conclusion, and future work.

II. RELATED WORK

The concepts of knowledge management system have a broad view and needs to be explicitly contextualized. Some of these concepts have been describe in relation to the point of abstraction of this research.

2.1 Knowledge and Knowledge Management Concept

The definition, characteristic and taxonomy of knowledge have been widely debated by researchers and ancient (Arisha & Ragab, 2013). This discussion has created a variety of meanings, classifications, and taxonomies, including defining knowledge as tacit or explicit, individual or organizational, internal or external, structured or unstructured, objective or subjective, and embroiled or personified or uncultured or rooted or pre-set (Arisha & Ragab, 2013). Becerra-Fernandez and Sabherwal, (2010) define knowledge as a higher form of information. Knowledge is also defined as a proficient frame, ideals, relative information, and adept awareness that offers assessment framework (Tjong & Adi, 2016). One of the most commonly used classifications of knowledge is Polanyi's (1967) tacit knowledge and explicit knowledge. Explicit knowledge is defined as knowledge that can be collected and easily arranged while tacit knowledge is not easily codified and is mostly found in the judgments and experiences of individuals' (Nonaka, Byosiere, & Borucki, 1994). Based on this research work, various researchers have defined tacit and explicit knowledge based on their perspectives and how these

two types of knowledge are interconnected (Oguz & Sengun, 2011). McIver and Wang (2016) have stated that the debate about the nature of what knowledge is, will continue and remain unresolved.

Knowledge management talks about a methodical and organizational definite framework to capture, obtain, organize, and apply tacit and explicit knowledge of organisations in order for those organisations to use them to increase effectiveness and creativity which helps the organisations maximize their knowledge (Alavi & Leidner, 1999, 2001). To complement the significance of knowledge management, knowledge management systems (KMS) are a necessity, KMS eases the creation, storage, and distribution of knowledge (Duke, Makey, & Kiras 1999; Bonner 2000). Knowledge Management System is a comprehensive method or approach to dealing with the production, storage, and sharing of knowledge, this knowledge could be tacit or explicit in nature, and is found inside and outside of an organization, this approach usually include the use of Information Technology (IT) systems and other available resources in an organisation (Alavi & Leidner, 1999, 2001). In comparison to earlier systems, such as document management systems and content management systems, knowledge management systems are able to offer superior aid in evading replicating research work and contribute in the methodical manner of capturing individual's knowledge and skills (Alavi & Leidner, 2001). KMS are commonly used in organisations for the following: (1) organizing and allocation/relocating of core standards/best practices (2) generating corporate knowledge reference books, such as company yellow pages, people data library, etc. (3) creating knowledge systems and knowledge charts; among other uses (Alavi & Leidner, 2001). In an educational context, KMS is used for learning plan activities and curricula development such as university catalog, employee handbook, e-learning and lesson activities. KMS are also used to manage knowledge gained through experience (tacit knowledge).

2.2 Knowledge Management Systems (KMS)

KMS are IT systems that manage the knowledge of organizations, these systems aid organizations generate new knowledge, record, utilize and allocate knowledge (Abdel, Waseem, Bassam, Majd, & Mohamad, 2015; Alavi & Leidner, 2001; Basten et al., 2015). An organisation with a good base of knowledge enjoys value-added business scanning and a superior understanding of various technology and competition, this enables the organisation to anticipate changes and make plans of addressing those changes (Carlo, Lyytinen, & Rose, 2012). KMS offers an inventive instrument to bring about changes in an organisation they also aid augmenting the flow of knowledge in an organization. These days, organisations are very interested in adopting different new technologies, by adopting KMS organisations will easily attain these goals. Academic scholars and consultants have both argued that implementing KMS in any organisation aids in maintaining its long-standing competitive advantage.

(Gonzalez-padron, Chabowski, Hult, & Jr, 2010; Liu & Lai, 2011), maintain top performance (Pina, Romao, & Oliveira, 2013) and increase the level of innovation (Gonzalez-padron et al., 2010; He & Abdous, 2013), particularly in today's business setting, considered as an economy driven by knowledge. For those reasons, organisations regard knowledge management as a key requirement for maintaining competitive advantage (Arvanitis, Lokshin, Mohnen, & Worter, 2013). However, investing in a new technology like knowledge management system not only requires money but preparation of the organisation to adopt this new technology successfully (Saleh, Abdelrahman, Skoumpopoulou, & Woodharper, 2017).

2.3 KMS Adoption in Organisations

Adoption, as defined by the "encyclopaedia of science and technology, is a phase of diffusion of technology; it is a process whereby organisations or individuals choose to use a technology (Khosrow-pour, 2005). Based on the definition above, in an organisational context, adoption is regarded as individual level adoption and organisational level adoption because, if end users plan not to use the technology (KMS), then the investment would be considered impractical. (Kaldi et al., 2008).

In spite of the availability of enhanced knowledge-based systems being available with abilities that support knowledge in the organisation, knowledge management systems adoption still remains low (Wagner and Bolloju, 2005). Technology adoption models have been used in prior research of knowledge management system adoption. Some of these models include: theory of reasoned action (Huang & Quaddus, 2006; Huang, Quaddus, Rowe, & Lai, 2011; Quaddus & Xu, 2002), technology acceptance model (Binney, 2007; Hester, 2008; L. Huang et al., 2011), diffusion of innovation theory (DOI) (Hester, 2008; Huang & Quaddus, 2006; Huang et al., 2011; Kuo & Lee, 2011), Technological-organisation-environment framework (He & Wei, 2003; Ramdani, Kawalek, & Lorenzo, 2009) and the KOPE framework was used by (Biswas, 2017).

Other studies have used a combination of more than one adoption model or an adoption model and another theory in order to hypothesize their models of research, they include: the use of TRA, TAM, and DOI to come up with a conceptual model to examine KMS adoption in studies by (Huang & Quaddus, 2006; Huang et al., 2011; Xu & Quaddus, 2012). A combination of diffusion of innovation theory and organisational capability approach by (Lin, 2013) to investigate KMS adoption and continued usage, a combination of TOE framework, task-technology fit framework (TTF) and the extended unified theory of acceptance and use technology framework by (Balaid, Rozan, & Abdullah, 2014) was used to examine KMS adoption in software development organisations. Alatawi, Dwivedi, Williams, and Rana (2012) used the unified theory of acceptance and use technology in the technological context of TOE in their KMS adoption study. KMS adoption was

investigated from an integrated view of the organisation, individual and technology using a combination of Delone and McLean's information system success framework, institutional theory and self-efficacy theory (Wang & Lai, 2014). KMS diffusion model and UTAUT was used to investigate KMS adoption by (Khanam & Mahfuz, 2017).

While prior literature that has focused on KMS in organisations have come up with frameworks to examine its adoption (Kaldi et al., 2008), recent literature has use adoption models to examine factors that affect KMS adoption. Various researchers make changes to the constructs of these models so as to make it suit KMS (Ryan & Prybutok, 2001; Sherry, Ryan, Abitia, & Windsor, 2000). Other researchers have added other models to adoption models to investigate KMS adoption (Alatawi et al., 2012; Khanam & Mahfuz, 2017). A commonly added model in adoption and acceptance studies is culture (Srite & Karahanna, 2006). All these research do not give concrete validation as to why a certain adoption framework was used.

2.3.1. KMS Adoption in Higher Education Institutions

In information systems, adoption and acceptance phase precedes implementation of a technology (Kaldi et al., 2008), the literature on KMS adoption in institutions of higher education especially in developing countries is quite low as most of these institutions go straight to the implementation phase (Abdel et al., 2015). For example, a study by (Gulnaz & Tatiana, 2014) focused on implementing a knowledge management system in a university in order to improve the scientific knowledge base of the university.

Another study by (Abdel et al., 2015) focused on implementing a customised KMS in order to integrate it with an already existing management system in the case study university in order to improve academic and administrative processes. A study by Tjong & Adi, (2016) focused on designing an already implemented KMS to aid curriculum development process in the institution of higher education. Another study by (Karna et al., 2016) focused on designing an information system (e-learning) based on a knowledge management system. Another KMS implementation study focused on designing a KMS to help a university with lesson study activity using question-based method (Mardhia et al., 2014). A study conducted on higher learning institutions in Malaysia, using the IS model, investigated the factors that affect successful implementation KMS (Panigrahi et al., 2014).

Also, several higher educational institutions use learning management systems (LMS) as their knowledge management systems because the knowledge base of these institutions is in the academic sections (Sejzi & Aris, 2013). Hence, most literature focus on acceptance and adoption of this technology by staff and students (Bousbahi & Alrazgan, 2015; Cigdem & Topcu, 2015; Fathema, Shannon, & Ross, 2015; Jamil, 2017). Only a few kinds of literature focus on adoption/acceptance of KMS in higher education institutions. Hossain, Ouedraogo,

and Rezania (2013) concluded from a research on a business school by integrating TAM and expectancy theory are used to investigate Canadians students' acceptance of KMS, the study showed that perceived utility and user affability, organizational benefits and community of practice are factors that influence students' acceptance of KMS.

2.4 Related Literature

As previously mentioned, most literature on KMS adoption is mostly focused on organisations in both developed and developing countries, only a handful of literature focus on KMS adoption in institutes of higher education. Also, it observed that most higher education institutions consider LMS as their KMS and use it to manage their knowledge resources. This section will explain how this work differs from others by highlighting in details the gaps in their works.

2.4.1. Knowledge management system adoption: exploring the effects of empowering leadership, task- technology fit and compatibility

The work by Kuo and Lee (2011) based in Taiwan conducted a survey on 500 IT managers of different companies, the study focused on improving the rate of success of KMS adoption. Using task-technology fit (TTF) and a lens to guide the work, the focus of this study was solely managers with results concerned about how managers could contribute to the success of KMS in their companies. The conclusion of this research showed that TTF, compatibility and empowering leadership significantly affect perceived ease of use which in turn affects adoption.

2.4.2. Examining a model of knowledge management systems adoption and diffusion: A Partial Least Square approach

Another research work by (Xu & Quaddus, 2012), even though peculiar to a developed country focused on KMS adoption and diffusion, the purpose of this work was to help top companies understand the factors that affect the adoption and diffusion of KMS. This study identified six different phases of KMS diffusion. This work came up with a new model to aid organisations to know what to do when embarking on KMS adoption or implementation. It also concluded that organisations should have a trial implementation before the implementation for the whole organisation.

2.4.3. Adoption of Knowledge Management Systems: A Study on How Wiki Systems Should Be Adopted by Minimizing the Risk of Failure

Wikis are KMS that are suited to manage tacit knowledge, a study by (Biswas, 2017) was centred on how wikis should be adopted by companies to minimize the risk of failure and prevent financial loss. This study used a framework known as KOPE to examine how companies can minimize the risk of failures of wikis. The results of this study indicated that, for KMS adoption to be successful, companies need to pick a KMS based on the transitional needs of the system, the

functional and non-functional requirement of the system. The author also suggested that companies need to follow the future trends in business by updating their wikis to capture knowledge automatically.

2.4.4. Examining the adoption of KMS in organizations from an integrated perspective of technology, individual, and organization

While the reviewed works above all talk about adoption of KMS each has focused either on individuals or organisations. Wang and Lai (2014) put forth a study that analysed KMS adoption from three perspectives; the individual, organisation and technological aspect. This work came up with a model to help understand the adoption of KMS amongst employees and their business associates in a petroleum corporation. It concluded with identifying the top factors that determined the adoption of KMS amongst employees.

2.4.5. Employee Acceptance of Knowledge Management Systems in Bangladesh: Integrating UTAUT and KMS diffusion model

A study specific to developing country context centered on the low acceptance of KMS in the country by employees. This study used a combination of two models; UTAUT and KMS diffusion model. Due to the low acceptance rate, implementation of KMS was not successful in the case study country. The aim of the study was to find out the factors that had an effect on the low acceptance and use results obtained from the study to aid top decision makers to know the right initiative to take to encourage employees to use and accept KMS (Khanam & Mahfuz, 2017).

2.4.6. Application of a Learning Management System for Knowledge Management: Adoption and Cross-cultural Factors

Another study by (Ritchie, Drew, Srite, Andrews, & Carter, 2011) focused on using an LMS for a KMS, this study was conducted in a developed country with an emphasis on international organisations. Using the TAM model and to check the moderating effect of location on the perceived ease of use and perceived usefulness constructs. Its aim was to check if the proposed LMS would serve as an efficient KMS in an international setting for commercial applications. The results indicated that the use of an LMS for a KMS would be successful depending on the location of the users in another international environment.

2.4.7. The Adoption of Knowledge Management Development System in Nigeria Higher Education

In a higher education context, a study of Knowledge Development Management Systems (KDMS) adoption in a developing country's university was done. The aim of this study was to identify the barriers and enablers to KDMS adoption at the case study university. Although it should be noted that this study viewed KDMS as an enhanced LMS and a sort of e-learning tool to aid academic activities like course planning etc. The study concluded from a pre-implementation

perspective that the results obtained could be generalized and applied to most universities in developing countries, especially the country where the research was carried out. The study recommended a research to explore power failure in the country because power stability would facilitate communication between students and lecturers (Amanze, Nwoke, & Amaefule, 2015).

2.4.8. Student Acceptance of Knowledge Management Systems: Evidence from a Canadian Business School

Hossain et al. (2013) worked on the acceptance of KMS by students of higher educational institution in a business school, this study is also conducted in a developed country, the aim of this study was to find out the predictors of KMS acceptance by students in business school using TAM theory and Vroom's expectancy theory to stress the need of having KMS to help manage their knowledge assets. The study concluded by indicating KMS system features and organisational incentive as the topmost factors that influence the adoption of KMS by business school students.

2.4.9. Instructors Adoption and Use of LMS

As mentioned previously, most educational institutions consider LMS as KMS; hence most literature on KMS in higher education setting is focused on the adoption of usage of LMS. Like a study by (Cigdem & Topcu, 2015) focus on the adoption of LMS by instructors' behavioural intention to use an LMS the main objective of this study was to find the factors that instructors at a vocational college level believed to have an effect on the usage of the system, perceived usefulness and ease of use were the main factors identified to have an effect on the adoption of the system. Another similar work was done by (Bousbahi & Alrazgan, 2015) where they tried to find out the factors that prevented IT faculty from the efficient use of an LMS. Using TAM, they deduced that external factors such as anxiety prevented the efficient usage of the LMS. Other literatures on KMS in higher education setting focus on its implementation.

In summary, specific to higher educational institute context, the reviewed literature is limited to only the academic sector and focuses more on faculty and students and seeks ways mostly to address the management of knowledge that can be easily documented and most of the adoption models used in these research was the TAM. Other departments and units of higher educational institutions should also be considered as they possess useful knowledge that could aid the efficient running of the institution and thus the knowledge resources that they possess need to be managed.

Based on the reviewed literature, this study recognises that KMS is a developing novel technology that is beneficial to both organisations and institutions of higher education; the need to have a KMS that manages not only explicit but tacit knowledge in these institutions cannot be overstressed. This study aims to fill the gap on the lack of adoption literature in higher educational institutions and to test the adoption of

KMS using the UTAUT2 adoption model especially in developing countries and specifically in the University of Jos.

III. RESEARCH METHODOLOGY

The use of the methodology is to investigate and examine the predictors of KMS adoption in University of Jos. This section also includes the method of data collection, how the research questionnaire was designed and administered and what method and tool that was used to analyse the collected data. The theoretical background of the research, the research hypothesis and the proposed theoretical framework of the

3.1 Research Approach

Research methods are the means used in research to elicit information in order to solve a particular problem. There are two approaches; quantitative and qualitative (Ghauri, Gronhaug & Kristianslund, 1995).

- i. Quantitative approach in research involves collecting statistical data as presenting an interpretation of the connections concerning research and theory as empirical, a favourite approach specific to positivism, usually a natural science method and seen as taking an objectivist idea of social reality, this sort of research can be categorised as direct chains of phases starting from theory to deductions, its process of measurement involves the search for indicators.
- ii. Qualitative research generally lays emphasis on words rather than quantity when collecting and analysing data. It is usually, constructionist, inductive and interpretive (Bryman, 2004). It allows the researcher to examine particular issues intricately (Bryman and Burgess, 1999). As a result, qualitative research method is commonly used in social and behavioural sciences and used among experts who try to know human functions and behaviour.

Since the purpose of this study is to identify factors that explain the behavioural intentions to adopt KMS, an adoption framework was chosen and research hyporesearch was developed. Data will be elicited from a sample population and analysed. Thus, the research method employed would be quantitative.

3.2 Theoretical Background

A number of numerous researchers have used various adoption theories to investigate adoption of different categories of IT (Abdullah, Dwivedi, & Williams, 2014; Lai, 2017).

Specific to this study, the theoretical framework used will describe the predictors of KMS adoption, the behavioural intention to adopt KMS and the moderating effect of individualism/collectivism (IC) at the individual level on the adoption of KMS. To go about the aforementioned tasks, this thesis uses constructs from the extended unified theory of technology and use acceptance (UTAUT2) and a cultural

dimension IC from Hofstede cultural dimension as a moderator. The conceptual framework developed from the combination of these two theories would explain predictors of KMS adoption in the University of Jos.

The UTAUT2 has been utilized in numerous projects to predict adoption, acceptance and usage behaviour of users of information technology in different fields (Abdullah et al., 2014; Baptista & Oliveira, 2015). This is the newest adoption model and has been used for discovering countless subjects; it has been adopted in the areas of self-technology service, adoption of smart mobile devices, learning management system acceptance, and the healthcare industry (Huang & Kao, 2015).

The UTAUT2 is an extension of the UTAUT theory to fit consumer context, it is a comprehensive model that integrated eight well-known adoption/acceptance model that gives great insight to adopting/acceptance of novel technologies or systems by consumers (Venkatesh, Viswanath., Thong, James, & Xu, 2012). The UTAUT2 gives a foundation for understanding individuals' behavioural intention to adopt any technology.

Cultural models have been added to adoption models to aid in better understanding of consumers and individuals' behaviour in adoption/accepting technology (Faqih & Jaradat, 2015). The process of innovation of technology has been a major research topic; and the influence of the concept of culture in the adoption process of these innovations cannot be overlooked (Kirkman, Lowe, & Gibson, 2006). For a long period of time, dimensions of culture by Hofstede have been the main research exemplar (Hofstede, 2011; Minkov & Hofstede, 2011). Hofstede's cultural model was formed based on collected data from individuals in different countries with varying cultural backgrounds and accumulated at country level (Hofstede, 1993).

While intended for use at the country level, significant distinctions exist at the individual level in cultural values, these distinctions require more research as they may possibly have a vital effect on the behaviour of individual's (Fang, 2011; Srite & Karahanna, 2006). Fang, (2011) has noted that, for studies that focus behavioural aspects of technology adoption, cultural values at the individual level of analysis are best suited. A lot of research focused on applying Hofstede cultural dimensions at the individual level has been proven to be reliable (Agarwala, 2008; Hammerich, 2012; Patterson, Mattila, & Patterson, 2008; Srite & Karahanna, 2006; Yoo & Donthu, 2005). Following prior research, this study applies Hofstede's cultural model, specifically, Individualism/Collectivism to investigate the Adoption of KMS in the University of Jos.

3.2.1. Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT is a theory proposed by (Venkatesh, Morris, Davis, & Davis, 2003), this theory is a combination of eight prominent associated acceptance theories. Individual theories

combined in the UTAUT consist of the innovation diffusion theory (IDT), the theory of reasoned action (TRA) (Ajzen & Fishbein, 1973), the theory of planned behaviour (TPB) (Ajzen, 1991), the theory of motivation (MM) (Davis, Bagozzi, & Warshaw, 1992), the cross model of TPB and technology acceptance model (TAM) (Taylor & Todd, 1995), the TAM (Davis, 1989), the PC utilization model (MPCU) (Thompson, Higgins, & Howell, 1991), and the social cognitive theory (SCT). Perceived ease of use of technology and perceived usefulness of technology was assimilated into the UTAUT model as performance expectancy and effort expectancy constructs, social influence and facilitating conditions make up the remaining independent constructs (Venkatesh et al., 2003). The UTAUT includes behavioural intention to use and usage behaviour, with four moderating variables: age, gender, voluntariness of use and experience (Venkatesh et al., 2003). The effort expectancy, performance expectancy and social influence are direct determinants of behavioural intention to use a technology, behavioural intention and facilitating conditions are direct determinants of usage behaviour (Venkatesh et al., 2003).

Since its inception, the UTAUT model has progressively been used by researchers', and has been useful in exploring users' acceptance of technologies such as mobile technologies (Yu, 2012), and incrementally verified and practical to numerous technologies for individual and organizational usage, in single and several countries (Im, Hong, & Kang, 2011). Although UTAUT, as shown in Figure 1, provides a well detailed framework for using and accepting a technology, it has been criticised by some researchers to have some limitations (Negahban & Chung, 2014).

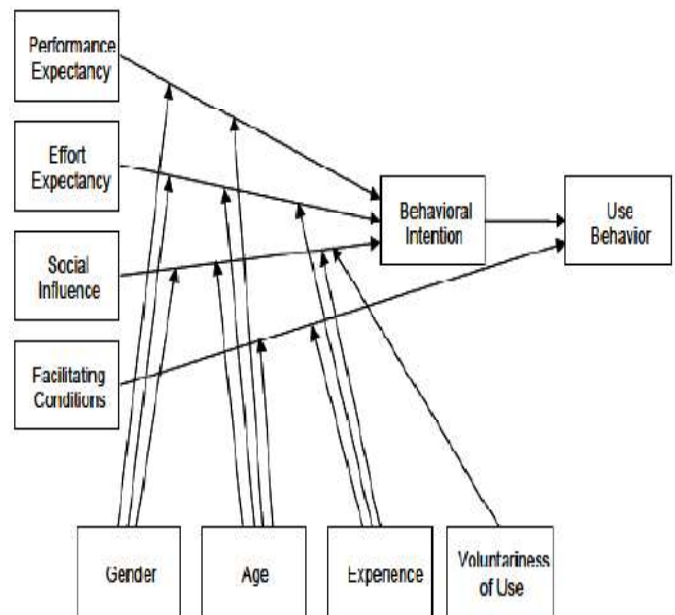


Figure 1: UTAUT Model by Venkatesh

3.2.2. Extended Unified Theory of Acceptance and Use of Technology UTAUT2

The UTAUT was extended to fit consumer context, the UTAUT2 model was then proposed (Venkatesh, Viswanath., Thong, James, & Xu, 2012). UTAUT was established as an all-inclusive unified model for understanding acceptance of a new technology or system by a consumer. Venkatesh proposed three ways by which prediction relationship of technology acceptance can be improved. Population and culture were considered firstly, acceptance of novel technology by consumers was looked at in this context. To broaden the hypothetical association of the UTAUT Venkatesh proposed to include diverse concepts and lastly, Venkatesh proposed adding novel predictive variables to the UTAUT. Notwithstanding, the unified model that includes added variables, (Venkatesh, Viswanath., Thong, James, & Xu, 2012) stressed the need to include predictive variables in line with the user of a technology.

Venkatesh, Viswanath., Thong, James, & Xu, (2012) came up with the UTAUT2 after examining the related behaviour of consumers and also by altering their prior view-moving from organisations to individuals-to establish a novel predictive model. Presently, this new model has progressively been accepted for exploring and explaining various subjects including mobile device adoption (mobile banking adoption), learning management system acceptance, knowledge management system adoption and acceptance, healthcare industry, and many novel technologies (Baptista & Oliveira, 2015; Huang & Kao, 2015; Lewis et al., 2013; Yoo & Korea, 2013; Khanam & Mahfuz, 2017). Three new independent constructs were added to the UTAUT2 model, hedonic motivation was the first construct integrated into the model, as a vital predictor (Venkatesh, Viswanath., Thong, James, & Xu, 2012). The next variable integrated into the model was the price value because the decision to adopt a consumer context is influenced by the price, cost and quality of the product (Hennings, Wiedmann, & Klarmann, 2013). The last integrated variable was the habit variable, based on recent studies that have focused on behavioural intention, habit is viewed as the accumulation of past behaviour and can also be observed as the extent to which humans feel certain behaviour is automatic (Kim & Malhotra, 2005; Limayem, Hirt, & Cheung, 2007). In the UTAUT2 model as shown in Figure 2, habit construct is a direct determinant of usage behaviour, while hedonic motivation and price value are direct determinants of behavioural intention. Another new relationship in this new model was introduced; facilitating conditions as a direct determinant of behavioural intention (Venkatesh, Viswanath., Thong, James, & Xu, 2012). These novel additional constructs were confirmed constantly in prior research as the important determinants of users' technology adoptions (Huang & Kao, 2015).

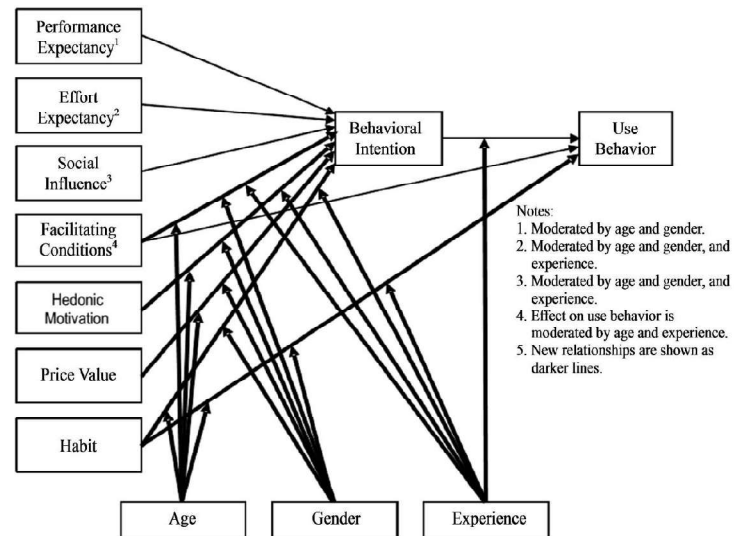


Figure 2: UTAUT2 model by Venkatesh

3.2.3. Individualism/Collectivism (IC)

Individualism/Collectivism is one of the five cultural dimension by (Hofstede, 1993, 2011), it is the degree to which individuals feel they can achieve their objectives and goals alone (individualism) or in a group (collectivism). Hofstede (1980) framed his renowned cultural dimensions centred on collected data from individuals with diverse cultural upbringings and combined them at the national level. While the cultural dimension proposed by Hofstede was proposed for use at the country level, researchers have proposed otherwise. Dorfman and Howell (1988) were one of the first researchers to test and verify that Hofstede's cultural dimensions work well at the individual level. Srite and Karahanna (2006) used Hofstede's cultural dimension at the individual level, the dimensions were used as moderators with an adoption model (TAM), in this research, and the moderating effects of culture at the individual level was confirmed.

A study on m-commerce adoption also applied Hofstede's cultural dimensions to test the influence of culture at the individual level (Min, Li, & Ji, 2009). In 2011, Minkov and Hofstede recognised that various research papers have used Hofstede's cultural dimensions for numerous studies attempting to check the influence of cultural values at the individual level. Furthermore, Taras, Kirkman and Steel (2010) conducted a review of similar works that used Hofstede's cultural dimensions at individual level, they confirmed that Hofstede's cultural dimensions applied at individual level of analysis in the reviewed studies are reliable, this result is also further validated in a study by (Rinuastuti, Hadiwidjojo, Rohman, & Khusniyah, 2014), several kinds of literature have stressed the need to investigate these dimensions at individual level to better understand the effect of cultural values on individuals behaviour (Agarwala, 2008; Hammerich, 2012; Patterson, Mattila, & Patterson, 2008; Srite & Karahanna, 2006; Yoo, 2005). Fang (2011),

also stressed the need for orientation of cultural values at the individual level as studies that focus on characteristics of behaviour and its effect on adoption of technology since the individual level of analysis reflects the important variations in cultures. Hence, the effects of IC have been researched extensively in the acceptance and adoption of different types of information technologies at national and individual level in fields like mobile commerce (Faqih & Jaradat, 2015), mobile technologies such as mobile banking (Baptista & Oliveira, 2015), mobile information service (Gao et al., 2011) and web technologies (Sánchez-Franco, Martínez-López, & Martín-Velicia, 2009). These studies all concluded that IC cultural value plays an important role in the adoption of technology in these specific areas.

3.3 Research Hypothesis

For this study, a combination of the extended unified theory of acceptance and use of technology (UTAUT2) with IC from Hofstede's cultural dimension as a moderator was applied as the hypothetical backing for carrying out this research. Before the inception of the UTAUT2, the UTAUT was well known as the most accurate framework model to predict acceptance of information technology (Martins, Oliveira, & Popovic, 2014). In comparison to its pioneer, UTAUT2 provides a significant upgrade in the variance that explains the intention to adopt and use a technology (Venkatesh, Viswanath., Thong, James, Y.L. & Xu, 2012), and consequently is applied in this study. Also, since various research have concluded that cultural values affect the way people use Information systems, IC from Hofstede cultural dimension at the individual level of analysis is used in this study (Baptista & Oliveira, 2015; Park, Yang, & Lehto, 2007; Srite & Karahanna, 2006).

3.3.1. Performance Expectancy

Performance expectancy is the extent to which individuals believe that using a technology will help them perform well in their jobs (Venkatesh et al., 2003). The performance expectancy is regarded as one of the essential factors that influence individuals' behavioural intention to adopt a technology directly. In this study, performance expectancy is the degree to which faculty and administrative staff of University of Jos feel adopting KMS would lead to increased job effectiveness. When individuals feel that adopting and subsequent usage of a technology will improve their job performance they are most likely to adopt that technology.

Hence, we hypothesize:

H1: the effect of performance expectancy would be positive on the behavioural intention of individuals to adopt KMS.

3.3.2. Effort Expectancy

Effort expectancy is defined as the ease which is attributed to usage of a system or technology by individuals (Venkatesh et al., 2003). The effort expectancy construct is valid in compulsory and voluntary settings (Venkatesh et al., 2003). In the context of technology adoption, effort expectancy and performance expectancy are the two most significant

determinants used for investigating usage behaviour of technology and the behavioural intention to adopt that technology or system (Casey & Wilson-evered, 2012; Davis & Davis, 1989; Kijisanayotin, Pannarunothai, & Speedie, 2009; Thompson et al., 1991). In the context of this study, effort expectancy is the extent to which the faculty and administrative staff of University of Jos believe that using KMS would be easy.

We thus propose the hypothesis:

H2: effort expectancy will positively affect the behavioural intention to adopt KMS in University of Jos.

3.3.3. Facilitating Conditions

The facilitating conditions construct is viewed as the extent to which a person considers that organization and technical infrastructures exist to aid the usage of a technology or system (Venkatesh et al., 2003). Prior research on aspects influencing acceptance of certain technology types have shown that facilitating conditions have an important influence on advanced adoption of technology and usage behaviour (Bagozzi, Davis, & Warshaw, 1992; Hung, Ku, & Chien, 2011; Kijisanayotin et al., 2009; Lee, Lin, Yang, Tsou, & Chang, 2013; Moore & Benbasat, 1991; Thompson et al., 1991; Venkatesh et al., 2003). These researchers concluded that facilitating conditions are robust predictors, which can be used for predicting acceptance of technology and its usage. We assume that facilitating conditions affect the adoption of KMS in University of Jos, if the faculty and administrative staff have technical and organisational infrastructures such as proper orientation on how to use KMS, they are likely to adopt that technology or system.

Based on this, we hypothesize that:

H3a: Facilitating conditions will have an effect on the behavioural intention to adopt KMS

H3b: Facilitating conditions will have an effect on the usage behavior

3.3.4. Hedonic Motivation

Hedonic motivation, when viewed in a consumer context, is a significant predictor of technology acceptance and usage (Venkatesh, Viswanath., Thong, James, Y.L. & Xu, 2012). Hedonic motivation is defined as the pleasure or gratification a user derives from using a technology or system (Venkatesh, Viswanath., Thong, James, Y.L. & Xu, 2012). In Information system field, hedonic motivation has been found to have a direct impact on acceptance and utilization of a technology. If the faculty and administrative staff of University of Jos perceive that the adoption and subsequent usage of KMS would be enjoyable to them, then they are most likely to adopt KMS.

Ergo, we propose that:

H4: Hedonic motivation will positively impact the behavioural intention to adopt KMS.

3.3.5. *Habit*

The habit construct is based on perception; it is a reflection of the accumulation of past experiences (Venkatesh, Viswanath., Thong, James, Y.L. & Xu, 2012) and the occurrence of the previous behaviour is seen as one of the major causes of present and existing behaviour (Ajzen, 2002).

Hence, we hypothesize:

H5a: The effect of habit on behaviour intention to adopt KMS will be a positive effect.

H5b: Habit will positively have an effect on user behaviour.

3.3.6. *Behavioural Intention*

Psychologists who study behaviour, thoughts and feelings of people have generally explored the relation of behavioural intentions and its effects on future behaviour (Aarts, Verplanken, & Knippenberg, 1998; Ajzen, 2002). Behavioural intention can be defined as the degree to which an individual has made deliberate and calculated plan to do a definite potential behaviour. It could also be a deliberate plan by the individual not to perform a prospective behaviour (Aarts et al., 1998; Ajzen, 2002). Based on different models that have used theories of psychology to explain and argue that individual intentions predict and influence individual behaviour (Yu, 2012), the UTAUT2 also agrees with the view that technology usage is influenced significantly by behavioural intention (Venkatesh, Viswanath., Thong, James, Y.L. & Xu, 2012; Venkatesh et al., 2003). Hence, we hypothesize:

H6: Behavioural intention will affect usage behaviour positively.

3.3.7. *Individualism/Collectivism (IC) - The Moderating Variable*

Culture is one of the most theoretically complex and intricate terms to define. (Hofstede, 1980, 1991) believes culture can be viewed as a shared indoctrination in minds of people. Hofstede, (1993) developed a cultural theory in which culture was viewed in five different dimensions. IC is one of the five dimensions; it has been used in various researches of adoption, acceptance and usage of technology. Individualism dimension simply means importance on personal objectives while collectivism refers to the importance placed on collective objectives (Kulkarni, Hudson, Ramamoorthy, Marche, & Petia, Georgieva-Kondakova Gorskov, 2010). Due to the influence of IC on social behaviour, IC is used prominently in literature behaviour (Triandis, 1995). Most of the adoption studies that have used or incorporated IC have explored IC cultural values on behavioural intention to use a technology (Baptista & Oliveira, 2015; Faqih & Jaradat, 2015; Srite & Karahanna, 2006). Devoid of reservation, it is, therefore, a mutual view amongst researchers to carry out studies to investigate the moderating effect of IC on the

behaviour of individuals (Faqih & Jaradat, 2015). The Figure 3 shows the proposed research model of this paper.

Therefore, we hypothesize that:

H7: IC positively moderates the relationship between behavioural intention and usage behaviour to use KMS at individual level more for collectivism than for individualism.

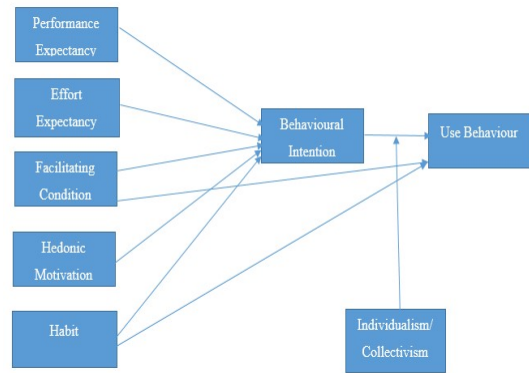


Figure 3: Proposed Research Model

3.4 *Study Population*

The staff and faculty of University of Jos are the target population of this research. The current total number of staff and faculty in University of Jos is 827; the exact number was obtained from the human resources office. The staff makes up 90.57 % of the total population. The faculty makes up 9.43% of the population. From this population, 379 including have access to laptops and have knowledge of information technology/information systems and use other information systems that have been implemented in the school. This population includes different groups regardless of departments, age and sex.

3.4.1. *Population and Sampling*

In order to get a broad view of a study, a sample of the total population is used. A sample is a subclass of that population. While the procedure involved in choosing an applicable number of the population is known as sampling (Sekaran, 2000). For this study, a representative sampling was used. Representative or probability sampling is commonly used with research that involves survey (Saunders et al., 2009). Using a formula that calculates the population size of a research, a sample size of 192 was gotten. This number would be used to validate the hypothesis of this research.

The formula used to calculate the sample size is shown in equation (1):

$$\frac{z^e \times p(1 - p)}{e^2} \div \left(1 + \frac{z^e \times p(1 - p)}{e^2 N} \right) \dots\dots\dots(1)$$

Where N is the entire sample population size, in this case: 379.

The margin of error e is a percentage that tells a researcher how much a sample deviates in opinions and behaviour from the entire population. In this study, the margin error used is 5%.

The reliability of a measure is determined by the confidence level, 90%, 95%, and 99% are commonly used standards by researchers. If a survey with a 99% confidence level is conducted say 5 times, given the same situation, the measure would be between the margin error 99 out of 100. In computing sample sizes, Z-scores are used to determine the level of confidence. In this study, the confidence level chosen was 95% with its corresponding z-score of 1.96.

The percentage value p is usually kept at value 0.5 by researchers when a survey is being done for the first time. Some researchers suggest 10 or 30 percent of the sample population.

3.5 Data Collection Method

When conducting a research, it is important to make a decision about the right method to be employed (Fisher, 2007). Generally, two methods are applied when collecting data for research; primary data collection and secondary data collection method. Saunders et al. (2009) defined primary data as data to be collected when the need arises, while secondary data is data that has already been collected. This thesis uses both primary and secondary data. The primary data for this research is the survey questionnaire that will be administered to the staff and faculty of the University of Jos and the secondary data for this thesis includes published journal articles, thesis and books all relevant to IT adoption.

3.5.1. Questionnaire

Saunders and Thornhill (2003) have argued that questionnaires are commonly used to collect data in research that use survey. Also, respondents are required to answer the same fixed questions, therefore, providing an effectual manner of eliciting responses from large samples. The survey instrument contained 28 questions. The first part contained information and description of proposed the novel technology (KMS). Lastly, the survey questionnaire included questions based on the construct of the UTAUT2 model and Hofstede's cultural dimension (specifically, individualism/collectivism) to identify respondents' view associated with their intention to adopt and utilize KMS.

3.6 Method of Data Analysis

The analysis of the collected data was done using Statistical Package for the Social Sciences (SPSS) software. Yin (2003) has stated that analysis of data is carried out to discover answers to asked questions and to connect information from a quantity of data.

Utilizing descriptive statistics like frequencies and percentages SPSS was used to test the level of significance at 5% level of probability. Descriptive statistics are used to generalize or describe variables and information from a given sample (Saunders et al., 2009; Fisher, 2010). In this study, descriptive statistics are used to give a summary of the collected data with the questionnaire. In order to measure the relationship amongst the different variables, a Pearson correlation test was done after the descriptive statistics test. Pearson correlation test is done when assessing the strength of the connection amongst numerical variables (Saunders et al., 2009). This test is conducted in this study to test the strength of the connection amongst the different variables. In this study, exploratory factor analysis (EFA) in SPSS is used to see the association of the diverse questions to each other. EFA is used to simplify interconnected measures in an orderly format (Suhr, 2006). Confirmatory Factor Analysis (CFA) was also conducted to enable the hypothesis of the study to be tested. Confirmatory factor analysis is an arithmetical method used by researchers to test the proposed hypothesis (Themessl-huber, 2014). The Analysis of Moment Structures (AMOS) was used to conduct CFA in this research.

3.6.1 Criticism of Method

Bryman, (2004) has argued that subjectivism is part of research. This simply means that what a researcher may perceive central and noteworthy may be due to the different relationships the researcher forms with the subjects that are being examined. Therefore, this study cannot be utilized to make assumptions that are universal for all user groups.

3.7 Reliability and Validity of Research Instrument

The reliability of collected data is measured in terms of the conclusion arrived at by other researchers observing similar phenomena (Easterby-Smith, Thorpe, Jackson & Lowe, 2008). For this study, the reliability of the research instrument was confirmed using the Cronbach Alpha test. This test is used to measure the inner uniformity reliability. This test is a "technique that requires only a single test administration to provide a unique estimate of the reliability for a given test (Gliem & Gliem, 2003). Cronbach's alpha is the average value of the reliability coefficients one would obtain for all possible combinations of items when split into two half-tests."

The validity of this thesis was done crafting and structuring the questionnaire to prior validated models. Validity, as argued by Saunders et al. (2009), is concerned with the causality in the relationship amongst two variables. Particularly, construct validity talks about the usage of questionnaires to evaluate if a certain characteristic is shown by a person or organizations (Fisher, 2010). Internal reliability and validity of collected data depend on how the questionnaire is structured and designed and the response rate (Saunders & Thornhill, 2003). In this study, exploratory factor analysis is also used to verify validity.

IV. ANALYSIS OF DATA AND FINDINGS

The analysis of the data collected for this study through questionnaires was done in order to realize the aim and objective of this thesis study. This section is divided into three parts: first, under the descriptive analysis section, the collected data was categorized. The next part shows how the model was tested for validity and reliability.

4.1 Demographic Characteristics and Descriptive Statistics

Descriptive statistics is the summary the figures in a group of data, the descriptive analysis includes numbers in average and/or percentages, graphs and tables (Agresti & Finlay, 2009). For this research, the target population is the administrative staff and faculty of the University of Jos who have access to laptops and are familiar with information technology/information systems that have been implemented in the school. The faculty respondents make up 20.58% of the whole 379 populations while the administrative staffs make up 79.42% of the whole population. A total of 5 responses out of the 196 received were incomplete. Kuzic, Fisher, and Scollary (2002) while quoting (Ghuri et al, 1995; Cramer, 1998) stated that SPSS is a commonly “acknowledged package used for data analysis in social sciences. Therefore, SPSS version 20 is used in this study to analyse the collected data.

Table 1 show that majority of the respondents were staff and they made up 81.6% of the total response while 18.3% of the respondents were Faculty.

Table 1: Respondent's distribution

Category	Percentage %
Staff	81.7
Faculty	18.3
Total	100

Table 2 shows the respondents distribution based on gender. The table shows that majority of the respondents were male. The staff male population made up 47.12% while the male faculty population made up 14.66%. The female staff made up 34.5% and the female faculty made up 3.7% of the total respondent population.

Table 2: Respondent population by gender

Sex	Frequency	Percentage %
Female Staff	66	34.5
Male Staff	90	47.1
Female Faculty	7	3.7
Male Faculty	28	14.7
Total	191	100

4.2 Common Method Variance

Common method variance is the total of false covariance common between variables because of the joint means applied in the collection of data (Malhotra, Kim, & Patil, 2006). In

this study, to test the common method variance, Harman’s single factor test was conducted using SPSS. The purpose of the Harman single factor test is to know if the bulk of variance in the collected data is due to a single factor. Podsakoff, Mackenzie, Lee, & Podsakoff (2003) have stated that the variance percentage of a single factor should not be 50%. The variance percentage got from the test in this study is 41.9% confirming the validity of the data.

4.3 Measurement Validation

Prior to testing the hypothesis of this study, reliability and construct validity of the research was evaluated. Exploratory factor analysis was conducted to validate the discriminant validity and convergent validity of the variables and the questionnaire. After this, Cronbach’s coefficient alpha was calculated for every variable to test for reliability. Lastly, a descriptive statistic was conducted on the questionnaire items to get the mean and the standard deviation.

4.3.1 Pearson Correlation

The Pearson correlation is a univariate analysis, it is an extremely useful statistic, it is commonly used when testing for correlation between two variables and it forms the foundation of a large number of other more sophisticated analysis such as regression analysis and factor analysis. The Pearson correlation test was performed on the performed on the variables and from the result, it could be concluded that there was a positive relationship between the independent and dependent constructs of the research model was confirmed. Detail of the Pearson correlation test is done for Performance Expectancy and Behavioural intention is shown below in Table 3.

Table 3: Pearson Correlation

	PE	BI
PE Pearson Correlation	1	.558**
Sig. (2-tailed)		.000
N	191	191
BI Pearson Correlation	.558**	1
Sig. (2-tailed)	.000	
N	191	191

4.3.2 Exploratory Factor Analysis

Exploratory factor analysis is always preceded by principal component analysis. It is a type of factor analysis used for the extraction of factors. Exploratory factor analysis is usually carried out to detect the core links amongst the measured variables. Exploratory factor analysis was carried out on the 28 questionnaire items. The result of this analysis showed high factorability based on the results of the KMO test and Bartlett’s test.

The Kaiser-Meyer-Olkin (KMO) measure of sampling accuracy is an indicator of the proportion of variance in the variables that could be attributed to underlying factors, a value close to 1 implies that factor analysis would be useful with the given data (Polite, 2010; AbuShanab & Pearson, 2007).

The KMO value for the collected data in this study is 0.910. Bartlett’s test of sphericity tests the correlation of hypothesis, smaller values usually indicate the usefulness of factor analysis of the collected data (AbuShanab and Pearson, 2007). The Bartlett’s test for this study was significant at a value of .000. the details of the KMO test and Bartlett’s test are shown in Table 4.

Table 4: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.910
Bartlett's Test of Sphericity	Approx. Chi-Square	3582.422
	df	378
	Sig.	.000

The Eigenvalue set for the extraction condition of the factors was 1.0. six factors in total accounted for 61.591% of the total variance of the extracted factors. Communalities were high alternating from 0.385 to 0.960. The six factors were rotated using the Promax rotation option in SPSS.

4.3.3 Reliability

The commonly used method in research to assess the reliability of Likert scales is the Cronbach’s Alpha test (Dong et al, 2008). This test was conducted on the variables that were accepted from the exploratory factor analysis to confirm the reliability of the questionnaire that was administered to the respondents. This test is also carried out to check for significant errors associated with the development of a survey. The result as shown in Table 5 indicates a reasonable loading for the 6 variables analysed. Research has shown that the accepted Cronbach’s alpha test values ranging from 0.6 upwards are reliable (AbuShanab and Pearson, 2007; Wu & Wang, 2005).

Table 5: Cronbach Alpha test values

Construct	Mean	SD	Cronbach's Alpha
PE	4.16	0.80	0.882
EE	4.02	0.84	0.865
FC	3.74	1.00	0.814
HE	3.71	0.95	0.867
HB	3.22	1.09	0.836
BI	3.94	0.84	0.900
IC	3.77	1.06	0.817
UB	3.49	0.91	0.879

4.4 Model and Hypothesis Test

To test the hypothesis of the research model, CFA was conducted. Under CFA tests like discriminant validity, model fit, composite reliability and convergent validity are carried out to test the hypothesis of the model. Correlation test and Average variance extracted were also carried out. To test the moderator effect, regression analysis was conducted using SPSS.

4.4.1 Confirmatory Factor Analysis (CFA)

Using the maximum likelihood method, the parameters of the model were estimated. This method approximates a value of the factors of the model and defines the values that will make the most of the likelihood distribution of the observed factors. After this, the GFI (goodness of fit test) was conducted on the proposed research model. In order to get a good fit between the collected data and the proposed model, HB3 was deleted from Habit construct. Table 6 shows the actual and recommended model values for the fit of different as put forward by (Hu & Bentler, 1999; Markus, 2012) and (Hair, Black, Babin, Anderson, & Tatham, 2010).

Table 6: Model Fit Indices

Fit Index	Recommended Value	Measurement Model	Structural Model
CFI	>0.90	0.957	0.957
GFI	>0.90	0.875	0.875
AGFI	>0.80	0.835	0.835
RMSEA	<0.08	0.058	0.058
RMSR	<0.10	0.039	0.039
NFI	>0.90	0.898	0.898

CFI: Comparative fit index, GFI: Goodness-of-fit index, AGFI: Adjusted goodness-of-fit; RMSEA: Root mean square error of approximation; RMSR: Root mean square residuals; NFI: Normed fit index. From Table 4 above two values were not up to the recommended standards. The NFI and the GFI.

To confirm the reliability of the measured construct, composite reliability (CR) was used as shown in Table 7 all the values were well above 0.7 (Hair et al., 2010). To get the convergent validity, the AVE (average variance extracted) was measured. The AVE is basically, the total variance of any given construct in relation to the total measurement error variance. The AVE is recommended at a value of 0.5 and should be less than the equivalent CR.

Table 7: Construct Reliability, Convergent Validity, Discriminant Validity and Factor Correlation Matrix

	CR	AVE	MSV	MaxR	HE	UB	IC	FC	PE	EE	BI	HB
HE	0.868	0.686	0.570	0.878	0.829							
UB	0.883	0.656	0.590	0.949	0.680	0.810						
IC	0.822	0.484	0.430	0.960	0.628	0.465	0.696					
FC	0.820	0.532	0.508	0.966	0.691	0.479	0.578	0.730				
PE	0.882	0.714	0.570	0.973	0.755	0.514	0.656	0.635	0.845			
EE	0.873	0.696	0.508	0.978	0.658	0.458	0.533	0.713	0.619	0.834		
BI	0.903	0.757	0.590	0.982	0.713	0.768	0.562	0.559	0.652	0.517	0.870	
HB	0.852	0.743	0.530	0.984	0.507	0.728	0.371	0.345	0.436	0.390	0.586	0.862

To identify the relationship among the constructs of the proposed model, a structural model was created. The GFI test for the structural model as seen in table 4.6 is dissimilar to the

GFI of the measurement model. The GFI indices measured were almost within the recommended value. This means that the collected data did to fully fit the structural model. After this, the next analytical step was the further analysis of the relationship between the proposed hypothesized variables used in the model for the study. Table 8 below shows the relationship between the constructs based on the proposed model of the study.

Table 8: Structural Model and Path Analysis

Hypothesis	Path	Estimate	P	Outcome
H1	BI ← PE	0.180	0.047	Supported
H2	BI ← EE	-0.036	0.709	Unsupported
H3a	BI ← FC	0.094	0.403	Unsupported
H3b	UB ← FC	0.075	0.296	Unsupported
H4	BI ← HE	0.301	0.002	Supported
H5a	BI ← HB	0.210	***	Supported
H5b	UB ← HB	0.332	***	Supported
H6	UB ← BI	0.508	***	Supported

From Table 8, the path coefficients show that not all of the proposed hypothesized relationships were sustained. H2, H3a, and H3b were unsupported. Positive and significant effects on Behavioural Intention (BI) was shown by Performance Expectancy (PE) ($\alpha=0.180$, $p<0.05$), Hedonic Motivation (HE) ($\alpha=0.301$, $p<0.05$) and Habit (HB) ($\alpha=0.210$, $p<0.05$). In the same way, significant and positive effect on use behaviour (UB) was shown by Habit (HB) ($\alpha=0.332$, $p<0.05$) and BI ($\alpha=0.508$, $p<0.05$). Facilitating Conditions (FC) was not significant although the relationship between it and BI and its relationship with UB was positive. The relationship between effort expectancy (EE) and BI was not significant and also not positive.

Using SPSS, the moderating effect of individualism/collectivism was calculated. The result showed a positive increase in the R2 value which is the percentage of variance explained by behavioural intention in relation to use behaviour.

Table 9: R Squared values

R Squared	R Squared Change	Change Statistics
		R Squared Change
.451	.448	.451
.460	.454	.010

Table 9 above shows the result of the regression analysis conducted to test the moderating effect of individualism/collectivism on the relationship between behavioural intention and use behaviour.

V. DISCUSSION, CONCLUSION, AND FUTURE WORK

This section presented the discussion and conclusion of this study finally the future work that can be deduced from the result of the analyses is also presented.

5.1 Discussion

The aim of this study is to determine the factors that have an effect on the adoption of KMS in University of Jos. This study puts forward a KMS adoption model based on the UTAUT2 model. As well as examining the relevance of the UTAUT2 in KMS adoption it examines its relevance in the context of a developing country, this thesis also sought to examine the moderating effect of individualism/collectivism on the behavioural intentions of individuals to adopt KMS. The results of this study show that some of the proposed hypothesis was validated. Nevertheless, there is very few similar research that could be used to compare the findings of this thesis both in developing and developed country context. Three out of the nine proposed hypothesis were rejected. Generally, this study practically gives partial support for the original hypothesis that were proposed.

5.1.1. Identified Factors

From Table 8 three factors were identified to be strong predictors of behavioural intention to adopt KMS in University of Jos; **Performance Expectancy**, **Hedonic Motivation** and **Habit**. **Behavioural Intention** and **Habit** in turn predicted **Use Behaviour**.

- i. **Performance Expectancy** has a positive influence on the behavioural intention to adopt KMS. This result is validated by other adoption studies in different fields that have identified Performance Expectancy as strong determining factor of “adoption and use of a technology (Baptista & Oliveira, 2015; Oliveira, Faria, & Abraham, 2014; Venkatesh, Viswanath., Thong, James, Y.L. & Xu, 2012).
- ii. This study shows that **Habit** and **Hedonic Motivation** have a substantial positive influence on behavioural intention to adopt KMS. Habit also has a substantial positive effect on Use behaviour. The result also indicated the positive influence of behavioural intentions on Use behaviour. Adoption studies in other domains that have used the UTAUT2 model also draw the same conclusions (Macedo, 2017; Oliveira et al., 2014).
- iii. From the result in Table 8, **Effort Expectancy** had a negative effect on behavioural intention to adopt KMS in University of Jos. This means that the Faculty and Staff do not perceive KMS as a system that would be easy to use in their jobs. While many adoption studies conclude that effort expectancy significantly and positively affects behavioural intentions, few studies like that of Hu and Khanam (2016) draw the same conclusions like this study.

The moderating effect of *Individualism/Collectivism* on behavioural intentions and use behaviour was also noted. It was proposed that the moderating effect on behavioural intention and use behaviour would be stronger amongst individuals with collectivist cultural values. There was a one percent increase in the variance explained by Behavioural Intention on use behaviour when the moderating construct was added. The result of this study showed that individualism/collectivism moderated the relationship between Behavioural Intention and Use behaviour positively. Therefore, higher collectivism means a stronger connection between Behavioural Intention and Use Behaviour. Studies in knowledge management fields that have applied moderators have reported same percentage increase in the variation like this study (Wang, Noe, & Wang, 2014). Adoption studies in other fields that have used Individualism/Collectivism at individual level as moderators have come up with different conclusions, some supporting a negative moderating effect, while other supporting a positive moderating effect (Faqih & Jaradat, 2015).

These findings show that the faculty and staff of University of Jos would adopt KMS only when it is viewed as a technology that would help them perform better in their jobs and if the proposed system that would bring pleasure to them if it is used. They would also adopt KMS as a result of their past habit which includes the usage of other implemented information technology in the school.

5.1.2. Theoretical Implications

This research makes some noteworthy theoretical contributions to literature in the area of knowledge management. The UTAUT2 model has been used extensively in comprehending users' adoption and acceptance of the technology. However, the numbers of studies in the field of knowledge management in developing countries that validate the constructs of the UTAUT2 model are quite limited. Therefore, this study contributes to the current body of knowledge by filling the gap in literature to aid better comprehension of the subtleties of technology adoption in the field of knowledge management in the context of a developing country with importance on the moderating effects of individualism/Collectivism at individual level of analysis.

This study has also shown the predictive power of the UTAUT2 model. It validates the theoretical and practical use capability in a new field and in a higher education institution in a developing country. The results derived from this study also confirm the moderating effect of Individualism/Collectivism at individual level of analysis on the adoption of KMS. This is a noteworthy contribution.

This study also shows that Hofstede's cultural value measured at individual level is reliable and valid in the field of knowledge management.

5.1.3. Practical Implications

This research gives some vital implications for practice especially in higher education institutions in Nigeria. Even though KMS has numerous advantages the adoption rate in developing countries and in the educational sector is low, potential adopters of KMS, based on this thesis should take into considerations the three most important factors-performance expectancy, habit and hedonic motivation-that affect its adoption and usage.

Finally, this research proposed that if the adopters of KMS feel they would have a pleasurable experience when using the system, they would adopt it. Institutions of higher education can benefit from this by ensuring that necessary facilities are available to aid the usage of KMS.

5.2 Conclusion

This research makes the following deductions; firstly, it shows that individual's behavioural Intention to adoption KMS is greatly influenced by Performance Expectancy, Habit and Hedonic Motivation. Effort Expectancy and Facilitating condition do not have a significant positive effect on behavioural intention. Habit also had positive effects on individual's Use Behaviour KMS. Secondly, potential usage of KMS is significantly influenced by Habit and Behavioural Intention.

In Higher educational institutions there is a need to know the factors that affect the adoption of any information technology/information system in this case KMS. This would enable the smooth implementation and usage of the system.

5.2.1. Limitations of the Research

There are limitations in this research. These limitations could serve as a basis for future research work. Firstly, the respondents for this work faculty and staff in a public university in Nigeria, this could be viewed as a limitation of this study and could lead to complications in making generalizations. Other factors like knowledge sharing, privacy/security and gender were not considered for this study.

5.3 Future Work

Future work could look at the adoption of only faculty or staff. Future work could also include students or look at the adoption of KMS at an organisational level instead of individual level with a bigger sample size this research could also be carried out at different higher education institutions and include a wider scope by considering public/private schools. Secondly, other factors like knowledge sharing, privacy/security and gender that were not considered in this study could be investigated to find their impact on behavioural intention to adopt KMS. Also, a future research work could take a longitudinal method to give a more thorough view of users' opinion on KMS adoption process. This study employed a quantitative methodology. Therefore,

future work could consider employing mixed method methodology.

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