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Use of Knowledge Management Technologies Within University-Based Libraries

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ABSTRACT

The use knowledge management technology has been a survival factor for university-based libraries in overcoming challenges faced by libraries in the contemporary dynamic and competitive environment. However, the use of such technologies has been inadequate, ineffective, and fragmented in most university-based libraries within Zimbabwe. Considering this problem, this study assessed the use of knowledge management technologies within an Open and Distance Electronic Learning (ODeL) university-based library. The study was guided by the Technological Acceptance Model (TAM), formulated by Fred Davis in 1986. An embedded design was used, entailing quantitative data sets facilitating a secondary and supportive role in a predominantly qualitative study. This was due to the need of including quantitative data in a qualitative study. Expert sampling was used to select library staff members, with interviews used to generate data. While criterion sampling was used to select relevant documents for document analysis. The study revealed that library staff members and patrons preferred using asynchronous knowledge management technologies, particularly due to their easiness of use. Individual and institutional factors were found to be the aspects that depressed the use of such technologies. The study noted the importance of adopting various promotional methods to increase usage of technologies in place. Furthermore, as a success factor for knowledge management technology use, the study cited the importance of a user needs analysis, to enable collective and informed selection of such technologies.

Keywords: Knowledge management, knowledge management technologies, Open and Distance Electronic Learning libraries, Technology acceptance

INTRODUCTION

In contemporary knowledge-based economies, knowledge management (KM) has proven to be a strategic resource for university-based libraries to survive and flourish in the ever-changing global market (Jain, 2013). As knowledge has become an essential aspect within university-based libraries globally, several knowledge management technologies have been established to harness and enhance knowledge management activities. The use of such technologies has been

seen as a survival factor for such libraries in addressing challenges faced in the current changing and competitive environment (Sinotte, 2004). In addition, such technologies have not only enhanced the effectiveness of libraries in service provision but have also enhanced satisfaction amongst library staff and patrons. Conversely, the use of such technologies has been uninspiring, insufficient and fragmented in most university libraries within developing countries, in general (Mavodza, 2010), and within Zimbabwe, in particular (Ncube & Tarumbira, 2016). Considering this problem, the purpose of this study was to assess the use of knowledge management technologies within a selected Open and Distance Electronic Learning (ODeL) university-based library in Zimbabwe.

REVIEW OF RELATED LITERATURE

Knowledge management of any scale without technology is extremely difficult, though the technology itself does not make knowledge management work; it acts as a connection and communications' facilitator and enabler (Sarrafzadeh, 2008). Broadbent (1998) posits that knowledge management rests on the utilisation and exploitation of an organisation's information. Mupa and Chabaya (2011) note that knowledge management is based on applying the fullness of an organisation's knowledge to its decisions. A cursory review of literature reveals that university-based libraries that have applied knowledge management technologies have managed to address discontentment and dissatisfaction amongst its clientele. In addition, such technologies have enabled the libraries to prove their relevance and value, through providing the right amount of information to the right person at the right time, with the right expense of financial and human resources. In addition, such technologies have increased operational efficiency in the libraries (Asogwa, 2012). Jasimuddin et al. (2005) designates that one of the most effective technologies used in knowledge management within university-based libraries are group collaboration technologies, which are used for group coordination and collaboration through electronic mail, teleconferencing, data conferencing, videoconferencing, groupware, and intranets. Such technologies are built around three key principles: communication, collaboration, and coordination. These allow groups to work together on documents, schedule meetings, route electronic forms, access shared folders, develop shared databases, and send electronic mail (Laudon & Laudon, 2000). Armstrong (2005) adds that in university-based libraries, staff members and library patrons use such technologies to communicate with each other, share resources and information. He also mentions that these technologies are particularly relevant in a library with diverse branches, enabling ease in the dissemination of knowledge. The following are some of the use of collaborative technologies:

- As a database for often asked questions;
- As a peer resource guide;
- For library instruction;
- As collaborative knowledge repositories for the public in the reference services environment;
- As a subject specific public resource guide;
- As collaborative workspaces to help manage knowledge for specific projects or teams in library reference services; and
- Enables work on a jointly authored document (Sarrafzadeh, 2008).

Data warehouses are also essential knowledge management technologies. Su and Needamangala (2000) elucidate that such technologies relate to a set of methods, systems, and tools leveraged together, used to produce a podium for delivering data to end users at an integrated platform. Such technologies enable decision support and knowledge discovery. Office automated systems can also be used in knowledge management. Armstrong (2005) explicates that office automated systems, such as document management tools, voice mail, and

imaging are designed to increase productivity of information personnel in the workplace. Database management systems are also used in knowledge management. These are used in university libraries to manage library membership records, library inventory, and management of records that conform to the library activities (Emezie & Nwaohiri, 2013). Such technologies are imperative in a library within an ODeL institution, where branch libraries dispersed in different geographical areas, can feed to the main repository through a database management system. Mupa and Chabaya (2011) found that the use of digital libraries was effective in knowledge management within libraries. Junnarkar (1997) also connoted that one of the most important innovations in knowledge management in relation to education and research is the digital library. The digital library's greatest contribution is in enhancing the value of the learning/educational process that results from the combination of digitally delivered content with learning support and services (Margherita, 2008).

There are challenges that affect the use of knowledge management technologies within university-based libraries. Some university libraries have insufficient tools and technologies for knowledge management (Ncube & Tarumbira, 2016). Mayekiso (2013) believes that this is usually the case within libraries supporting ODeL universities in developing countries, which require heavy investment on proper Information Communication Technologies (ICT). Weir (2015) clarifies that it is not about being equipped with adequate technologies, but it is about lack of funds on the part of the university libraries, to acquire and support these technologies. Due to budgetary constraints, most university libraries in developing countries are not well-equipped with essential knowledge management technologies. Shongwe (2017) debates that knowledge management is not based on advanced and extra-ordinary technologies, but it is based on having the pre-requisite skills and competencies to use and apply technologies on the ground. In his view, a pen and a paper can be used to create, store, share and disseminate vital knowledge. Roknuzzaman and Umemoto (2009) provided another view by stating that traditionally, librarians have not worked with Information Technology (IT) departments, however, due to the advent of the digital age, librarians now work hand-in-hand with IT experts, which is a challenge for librarians as they have to relate to IT staff who are usually technically minded.

THEORETICAL UNDERPINNING

A study on the use of knowledge management technologies within university-based libraries falls within the ambit of theories focusing on the use of technology. There are several theories that have been propounded within this domain to understand the use of technologies. One of these theories is the Technology Acceptance Model (TAM). The Technological Acceptance Model (TAM) was initially formulated by Fred Davis in 1986. Davis (1986) propounded that a user's use of a technology is a response that can be attributed to the user's motivation. This, motivation is influenced by an external stimulus that entails the actual system's features and capabilities. Davis isolated the features and capabilities of a technology as the determining factors that affect technology's adequacy by targeted users. Chittur (2009) clarified that a technology should be in a position of capturing the qualities and capabilities that are envisioned by a potential. As such, it is solely after a potential user has been aptly motivated to make use of the technology that s/he would habitually use the technology. Davis (1986) submitted that users' motivation can be designated to three factors, which consist of perceived usefulness, perceived ease of use, and attitude towards using the technology. The attitude of a user towards technology is a crucial factor on the use or rejection of a technology tool. This attitude is influenced by perceived usefulness (users' belief that a technology could enhance performance) and perceived ease of use (user's belief that the use of a technology would be free of effort). In upgrading this model, Venkatesh and Davis (1996) denoted that these beliefs were influenced

by the technology design features. Venkatesh and Davis (1996) published the subsequent Technological Acceptance Model:

Technology Acceptance Model

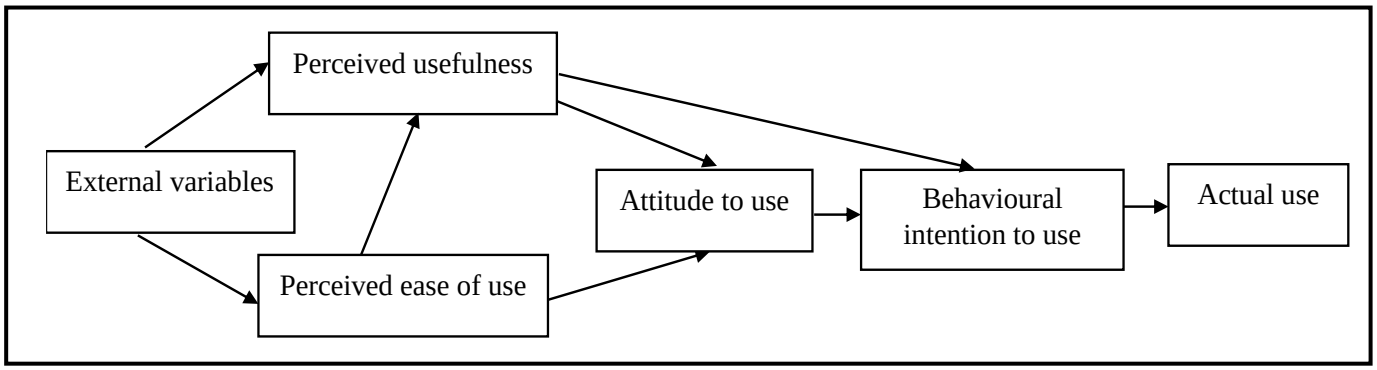

Figure 1: Diagrammatic Representation of the Technology Acceptance Model

Source: Viswanath, V. and Davis, F.D. (1996). A model of the antecedents of perceived ease of use: development and test," *Decision Sciences* 27, (3), 451-481.

Machimbidza (2014) indicated that the key external variables in the model that affect the use of technology entail social, cultural, and political factors. The social factors consist of skills, language, and other conditions that facilitate usage. While the political factors correspond to the effect of using technology within the context of politics and political crisis. The attitude to use is centred around with the users' evaluation in using the technology. Behavioural intention to use is concerned with the likelihood of a user using the technology. Therefore, this theory guided this study by providing constructs that affect the use of technology, enabling an effective assessment study of a selected ODeL university-based library in Zimbabwe. The theory guided the formulation of the following research questions:

1. What are the preferred knowledge management technologies used by an ODeL university-based library?
2. What are the factors preventing and/or depressing the use of the technologies?
3. How can the use of such technologies be enhanced?

SCOPE OF STUDY AND METHODOLOGY

The study was conducted within a university-based library, serving Open and Distance Electronic Learning (ODeL) patrons in Zimbabwe. The university has regional campuses, located in every province in Zimbabwe. Each regional campus has a branch library; hence the library is composed of regional libraries. Due to this geographical dispersion of the libraries, the use of knowledge management technologies was expected to have a strong bearing on ensuring uniformity and effectiveness in operations. The study related to all the regional libraries as they formed the university-based library. To sufficiently answer the research problem and the research questions, a mixed methods research approach was adopted, through an embedded design. Creswell (2009) enlightened that an embedded design is a mixed methods design that entails one data set facilitating a secondary and supportive role in research that is based principally on another data type. In this study, the premise of this design was that a single data set was not sufficient in answering the research questions. Thus, the researchers used this design due to the need to include quantitative data in a predominately qualitative study. Expert sampling was used to select the library staff members, as they had extensive and relevant information about the study. Criterion sampling was used to select relevant documents. Thus, the criterion used in the selection of documents adhered to documents that related to knowledge

management technologies in the library; inclusive of reports, memorandums, minutes, policies, and procedural manuals. These two sampling techniques are a form of purposive sampling, in which Patton (2002) signified that the wisdom and strength of purposive sampling lies on the selection of information-rich cases. To generate data from the library staff members, telephone interviews were used. Saturation was reached upon interviewing fourteen library staff members. The researchers used a semi-structured interview guide in conducting the interviews, encompassing open and closed-ended questions. Document analysis was used to analyse documents that were relevant to the study. In analysing data, the researchers made use of the QDA Miner Elite software. This software was used to analyse qualitative text-based data transcribed from interview participants, to form cases. The cases enabled the production of themes, words, and verbatim quotations, which were used to present the data. The same software also enabled analysis of the embedded quantitative data, to produce tables. Several ethical and legal considerations were put in place, with the major ones being informed consent, anonymity, confidentiality, and ethical clearance.

FINDINGS AND DISCUSSIONS

The findings and discussion are sub-divided into themes, with the first theme focused on the preferred knowledge management technologies. The second theme adhered to factors preventing and/or depressing the use of knowledge management technologies and the third theme looked at strategies of enhancing the use of knowledge management technologies.

Preferred Knowledge Management Technologies

The study found that there are several knowledge management technologies preferred by library staff members. The following Table 1 provides a summary of selected preferred knowledge management technologies as identified by the study participants:

Table 1: Types of Knowledge Management Technologies (N=14)

Preferred Technology	Times mentioned*
Social media technology	27
Electronic mail facilities	26
Repository	18
Database management systems	13
Office automated systems	12
Groupware	8
Intranets	7
Data conferencing facilities	6
Digital imaging tools	6
Document management tools	6
Teleconferencing facilities	5
Digital library facilities	4
Videoconferencing facilities	3

Times mentioned indicate the actual number of instances when the technology was identified during the interviews. It was probable for one participant to indicate a knowledge management technology at different times within the interview process, and through different words. Thus, the frequency (times) of mention specifies the significance of each technology.

From the above table, social media technology was the most preferred technology. Study participants highlighted that this was because such technologies provided a wide array of options for knowledge management processes (knowledge creation, capturing, transfer, sharing and dissemination). One participant noted the following:

> *I think us as library staff members we generate, inscribe, store, share and disseminate knowledge, however, to a greater degree this is done through informal means. For instance, as library staff members we discussed and agreed to establish a social media-based group in 'WhatsApp' that facilitates these knowledge management activities in accord to work and other aspects in our circles … however, it would be good for us to effectively use other formal means of knowledge management.* [Library staff, Case 1]

> *I have found Facebook, Twitter, and LinkedIn immensely helpful in our knowledge goings-on as library staff.* [Library staff, Case 5]

These findings emphasise informal peer groups alleviated technologies as the favoured knowledge management technology. This is synonymous with a study by Mupa and Chabaya (2011) who found out that networking of professionals through informal open and rigorous dialogue were viewed as processes in knowledge management, enabling the creation, sharing and transfer of knowledge. In addition, Mayekiso (2013) exposed that communication amongst library staff was an imperative process in the creation, sharing, transfer or dissemination of knowledge. Though the Technology Acceptance Model by Venkatesh and Davis (1996) the external variables construct, tried to explain this, however, it fell short in addressing this aspect. This aspect is clear through the lenses of the Selective Exposure Theory by Klapper (1960), which highlights that individuals tend to gravitate towards media that bolster formerly held convictions set by peer groups, family structures and societal influences. The theory further emphasised interpersonal and at times informal dissemination of information.

From the interview findings, the other preferred knowledge management technology was email. The preferential use of email was cited in diverse ways; some of the participants provided general perceptions, whilst others hinted at specific aspects that made them favour electronic mail. The following are some of the sentiments:

> *I favour to make use of electronic mails because it provides platforms for knowledge codification and transfer. For instance, as the library staff members generate different reports, from monthly reports to special purpose reports, they codify the knowledge through the electronic mail facility and then disseminate it to the respective recipients* [Library staff, Case 4]

> *Other than the use of social media, the library staff members can share knowledge through different online and offline platforms. In my view, the culture of formally sharing knowledge amongst regional libraries is not evident. For instance, the only way of sharing knowledge is through the posting of messages through the electronic mailing system.* [Library staff, Case 7]

Closely interrelated to the preceding insights of electronic mail enabling knowledge codification and transfer (Case 4 & Case 7) was the observation by several participants that electronic mail was the preferred knowledge management technology due to its ease of use. The following opinions were aired by one of the participants:

> *I prefer to use electronic mails because they are easy to use and provide instant access to information and files. In addition, they can function as a cloud storage facility as one can opt to send him/herself files and messages, acting as a paper trail of discussions and communications conducted for future reference*. [Library staff, Case 11]

These findings were also authenticated through documents analysis, as the researchers noted that staff members were obliged to use electronic mail in forwarding communication to diverse stakeholders. These findings are in accord to what Ncube and Tarumbira (2016) noted, as they highlighted that most individuals prefer using electronic mail as it is simple and easy to use. As soon as one sets up email, composing, sending, and receiving mail is fairly simple. This also supports and validates the perceived ease of use construct of the Technology Acceptance Model by Venkatesh and Davis (1996) which propounds that perceived ease of use of a technology is a strong motivation for individuals to use a technology, given that it adheres to the extent to which an individual believes that using a technology would be free from effort.

Of interest, the study established that videoconferencing was the least preferred knowledge management technology, which is against the backdrop that this is a media rich technology. One of the participants indicated that videoconferencing provides a synchronous and distinctive touch that enables individuals to communicate with each other effectively. Another participant highlighted the subsequent:

> *Through the use of the Skype and Zoom Rooms facilities, I have been able to communicate regularly through videoconferencing with one of my close peers in another regional. We have been able to share knowledge without extensive financial investment. In addition, we have been able to relate to each other at any given time … I am currently in the process of advocating that all library staff members install such software so that we can continuously conduct our meetings for collective decision making through these facilities.* [Library staff, Case 12]

From the findings in Table 1, the interview findings, and documents analysed, it has emerged that the study participants tended to prefer asynchronous technologies, which included electronic mail, the repository, social media technology and office automated systems. Such technologies are termed asynchronous because they are not interactive in nature, unable to provide instant feedback. One of the participants highlighted the following:

> *I personally prefer those technologies that do not require me to be in constant contact with the recipient as they ensure efficiency, and thereby increasing my performance and undertakings … There are several restricting issues that prevent me from using those resolute and synchronised technologies. In addition, the use of unsynchronised technologies enables me to send and receive information at any given time … in addition, synchronised technologies through real-time streaming is extremely costly in terms.* [Library staff, Case 8]

Though these asynchronous knowledge management technologies, according to the Media Richness Theory by Daft and Lengel (1986) are not that rich, they were the preferred

technologies by the study participants. Most of the participants in the study revealed that these technologies were effective in facilitating their performance in their knowledge management endeavours. This further connotes with the Technology Acceptance Model by Venkatesh and Davis (1996), whereby the perceived usefulness construct has a bearing on the use of technology, as it is a user's belief that the technology could enhance their performance.

Factors Preventing and/or Depressing the Use of Knowledge Management Technologies

There were numerous factors mentioned by the study participants responsible for the inadequate and fragmented use of knowledge management technologies. Such factors landed themselves into personal and institutional categories. Table 2 below provides a summary of the selected factors in accord to the number of times of each mention:

Table 2: Factors Affecting the Use of Knowledge Management Technologies (N=14)

Factor	Times mentioned*
Lack of adequate training and development (institutional)	25
Inadequate technological infrastructure (institutional)	24
Lack of knowledge management culture (Institutional)	13
Inadequate awareness on various technologies (personal)	11
Inadequate strategies for knowledge management (institutional)	11
Lack of motivation (personal)	9
Difficulties and complexity in use (personal)	8
Lack of time to use (personal)	8

Times mentioned show the actual number of instances when the factor was identified during the interviews. It was probable for one participant to indicate a factor different times within the interview process, and through different words. Thus, the frequency (times) of mention specifies the significance of each factor

Table 2 above reveals that lack of awareness about various knowledge management technologies available in the library was a factor affecting the use of technologies. Several viewpoints were put forward in explaining this aspect, the following are some of the aired emotions:

> *I am sure that the computer resources we have in place provide a number of knowledge management technologies … however, I am personally not aware of some of these technologies we are exposed to.* [Library staff, Case 14]

> *I'm informed that the library has instituted several knowledge management technologies, including collaboration and groupware facilities, however, I have never been properly oriented to these. Probable there is a need for me to invest some time in looking into them*. [Library staff, Case 12]

I have had much conversation on the essence on knowledge management technologies embedded within staff members, but never have I seen the library staff members taking an initiative-taking approach in this sphere. [Library staff, Case 9]

In addition, through analysing diverse memorandums and reports generated by library staff members, the researchers noted inadequate knowledge on knowledge management technologies by staff members. This closely related to what Lee (2005) said, when he signified that some knowledge management initiatives and innovations in libraries could be stalled by the library staff that may not be aware of knowledge management related aspects; particularly its importance to the 21st century library clientele. The Technology Acceptance Model by Venkatesh and Davis (1996) failed to adequately explain this factor as having an effect on knowledge management technology, however, this was well articulated by Rogers (2003) in his Diffusion of Innovations Theory, which propagates that the process of using a technology is affected by communication channels, which addresses lack of awareness issues. Rogers (2003) expounded that diffusion as a social process, encompasses interpersonal communication relationships, in relaying information about technology.

The study further found that lack of awareness was a direct result of lack of training and development. As can be noted in Table 2 above, several participants were of the view that inadequate training and development on the use of knowledge management technologies ensured inadequate and depressed use of such technologies. Some of the sentiments put forward are as follows:

The only training or let me say instruction on knowledge management was during my induction, were I was advised to share ideas, experiences and correspondences with other counterparts in other regional centres through the intranet. This was approximately six years ago, hence for these past six years I have received nothing in this regard. [Library staff, Case 2]

The issues of using divers Information Communication Technologies, including these on knowledge management within the library circle is ironical; on one side you are expected to make use of such technologies to meet institutional objectives, while of the other you are not properly oriented on the use of the technologies … Personally, I have never had any formal training in this regard, though through trial and error with my library compatriots, I have managed to orient myself on some of these technologies [Library staff, Case 10]

Through analysing some of the library reports, the researchers found that one of the participants who had received formal training on knowledge management, had done so through the Open Knowledge Hub (OKhub) widget implementation workshop, which was held in one of universities in Zimbabwe. These findings are the same with the findings by Ugwu and Ezema (2010) who found that due to the lack of training on knowledge management issues, library staff did not place much emphasis and importance in practicing knowledge management. Though the factor of training and development may be extracted and inferred to within the external variables construct, however, this is not clearly stated. This factor is explicitly demonstrated in the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh, Morris, Davis and Davis (2003) who propounds an important moderating variable in the use of technology, which is experience. Such experience, according to Ncube and Tarumbira (2016) is accrued through continuous training, developments, and improvement.

One of the key institutional factors, mentioned thirteen times as contributory to inadequate use of knowledge management technologies was a weak organisational culture that fosters knowledge management activities and initiatives. According to Dutt (2008) a strong knowledge management culture arbitrates relations between individual and organisational knowledge, creating an environment for social interaction, which eventually determines the extent of using several strategies and tools for knowledge creation, transfer, and application. Several participants said the issue of an inadequate knowledge management culture; classifying it as either 'extremely weak,' 'in its initial stages,' or 'entirely absent.' Some of the insights brought forward by the participants are as follows:

> *There is much talk within the library circles on knowledge management and its importance in staff development, and overall service provision; however, the university and library management is failing to implement sound mechanism, strategies to harness knowledge within the staff and to enable the sharing of knowledge amongst the staff members. For example, some similar universities have established what they call knowledge mapping, to provide direction for knowledge management activities.* [Library staff, Case 7]

> *A culture of knowledge management creation, capturing, storage, sharing, and retention is not apparent in the library. This adversely affects the use of diverse knowledge management technologies … The library management should create an environment where trust triumphs. The organizational culture should inspire collaboration among the library staff to ensure that ideas and innovation are established.* [Library staff, Case 3]

> *The organisational culture in relation to knowledge management is extremely weak. There is a need for refocus and realignment of the university and the library's way of doing things. Nowadays, knowledge management has proven to be a success factor for institutes, as such there is need of re-orienting the general culture into facilitating and enhancing this aspect.* [Library staff, Case 4]

From these insights, what appears is that not much has been done to change the culture of the institute to be more knowledge management oriented. These findings concur with Mavodza (2010), who specifies that usually, a lack of the right culture and environment for capturing, sharing, and creating knowledge is a major limitation to knowledge management adoption in university libraries. This study underlines these views as it is imperative for library staff members to conform to knowledge management activities to copes with the global trends and place the overall university on a map in the current competitive fraternity.

The other institutional factor that negatively affected the use of knowledge management technologies was the lack of adequate technological infrastructure. This was a perception that was shared most of the study participants in numerous ways, through diverse tones, as noted below:

> *Though I am very much aware of the vast benefits brought about by the diverse ICT tools and applications found within the library, however, I personally do not use them at regular intervals due to network issues and computer capacities of computer resources within the library.* [Library staff, Case 1]

> *Working in the library is a paradox, we are expected to enhance knowledge management related activities, like creating, sharing, disseminating knowledge; however, the library does not provide adequate infrastructural resources, like ICT tools to foster the activities.*

For instance, the library has failed to provide adequate computer resources, as we are still using outdated computer versions with inadequate capacity … the library has also failed to ensure fast Internet connectivity, the instalment of tools and application to facilitate aspects like videoconferencing … Furthermore, we do not have a library bulletin to update us on library related activities in other regions. In such a view, we end up using those free applications like Google Drive and Dropbox to conform to knowledge management. [Library staff, Case 3]

Though I agree that the library cannot keep pace with the dynamic nature of technology, and that it has tried to put in place some of the pertinent resources, I, however, submit that more effort is needed to ensure that most infrastructural resources pertinent for effective knowledge management endeavours. [Library staff, Case 9]

The university should avail to the library funds to purchase the latest versions of computers. As library professionals we would want to undertake videoconferencing as we are scattered across the divide, with these 'stone age' computer this cannot be undertaken; hence the need for new computers. [Library staff, Case 14]

To validate these findings, the researchers also noted, through document analysis, that most of the ICT infrastructure, like computers, were acquired between year 2000 and year 2010; having applications that may not be in sync with the needs of the contemporary trends. In addition, the researchers further analysed documentation that related to the network bandwidth, the researchers noted that the bandwidth was quite limited in comparison to the users within the university. Furthermore, the researchers noted that there was lack of documentation on Internet based knowledge management platforms and application to facilitate effective knowledge sharing. A study by Sunassee and Sewry (2002) established that though there were a number of resources at the disposal of library staff members to undertake knowledge management, their adequacy left much to be desired. In addition, a study by Asogwa (2012) also revealed that inadequate resources were a challenge for library staff members in relating to knowledge management activities. This aspect was explained by Rogers (2003) in his Diffusion of Innovation Theory through the perceived characteristics of innovation construct. According to Rogers (2003), an effective technology provides a relative advantage in using the technology, persuading users to use the technology.

The Technology Acceptance Model by Venkatesh and Davis (1996) denoted that attitude plays a significant role in the use of a technology. According to Venkatesh and Davis (1996) such attitudes is influenced by perceived ease of use, corresponding to users' belief that using a technology would be free of effort. This study also found out that there were several attitudinal entities that affected the use of technologies, these included lack of motivation, time and a belief that using technologies was difficult due to complexities. One participant summarised such attitude in the following terms:

I have had much conversation on the importance of knowledge embedded within staff members, but I have never seen library staff members taking a more proactive approach in this sphere. [Library staff, Case 13]

These findings are in accord to sentiments aired by Fischer (2011) in relations to the selective exposure theory, as they expounded that individuals tend to avoid those aspects that are inconsistent with their beliefs and attitudes. Rogers (2003) also cited that the personality characteristics, which include general attitude towards affects the diffusion and use of a technology.

Strategies of Enhancing the Use of Knowledge Management Technologies

Gibbert and Probst (2002) postulated that any successful knowledge management endeavours requires effective strategy, which should be aligned with institutional strategy. Several strategies were put forward by the study participants, with the issue of promoting the use of current knowledge management technologies taking a leading role, Table 3 below cites the methods of promotion forwarded by participants:

Table 3: Methods of Promoting the Use of Knowledge Management Technologies (N=14)

Method of promotion	Times mentioned*
Provide manuals on the use technologies	18
Training and developing staff members	16
University and library management taking a leading role in the use of technologies	14
Build a knowledge-based culture	12
Library staff members establishing communities of practice	3

Times mentioned indicate the actual number of instances when the method was identified during the interviews. It was probable for one participant to indicate a method different times within the interview process, and through different words. Thus, the frequency (times) of mention specifies the significance of each method

The most mentioned promotional method was the provision of manuals that pertained to the use of technologies. The following was noted by one of the participants:

> *Even though the library does not have adequate knowledge management technologies, I think that the little we have we can do a lot given the supporting resources … supporting resources may include documents that correspond to the use of the technologies.* [Library staff, Case 12]

Through document analysis, the researchers also established that there few documents that pertained to the use of most technologies. Emphasising this point, Kidwel and Lindeohnson (2003) and Roknuzzaman and Umemoto (2009) affirmed that within the context of knowledge management in university libraries, there should be led down procedures that relay information on knowledge management activities. Hayes (2004) asserted that such procedures are called Standard Operating Procedures (SOPs), and should accurately reflect good knowledge management practices, being sufficiently practical and usable in the library.

The other key promotional method of using knowledge management technologies was training and developing staff members. Several feelings were aired on this aspect, some of which include the following:

> *It is a fact that without training and development, maybe through workshops and seminars, on the essence of knowledge management the library staff members will remain ignorant on the significance of this practice to the 21st century library profession in service delivery.* [Library staff, Case 3]

> *Continuous training and development are vital ingredients in realising effective and full utilisation of any given technology.* [Library staff, Case 2]

> *Training staff members in this esteem cannot be overemphasised*. [Library staff, Case 7]

Such findings are in line with the recommendations made by Ugwu and Ezema (2010) who submitted the essence of training, developing and retraining of librarians for them to face the rapid changes in technology for effective application of knowledge management in Nigerian university libraries.

It emerged during the interviews that the university and library management should play an active role in using various technologies. One of the participants noted that the management should lead from the front. According to the participant, it was not enough for the management to speak of using knowledge management technologies, but they should be the ones in the forefront, acting as referral points and leaders in this regard. Rogers (2003) in explaining the diffusion of innovation process, noted the essence of opinion leaders in propagating information and motivating diffusion. In addition, Fischer (2011) elucidated that the selective exposure theory places prominence on opinion leaders as mediating agents and facilitators in enabling people to up take any entity. Therefore, the researchers underscored this point as valid, ensuring that staff members have 'role models' to refer to in their knowledge management endeavours.

A knowledge-based culture was also mentioned as a method of enhancing the use of knowledge management technologies. Emphasis was placed on the provision of incentives for staff members and establishing an environment that fosters knowledge management. The following are some of the opinions put forward:

> *The library management should create an environment where trust triumphs. The organizational culture should inspire collaboration among the library staff to ensure that ideas and innovation are established. In other terms, it is the responsibility of the library leadership to safeguard that staffs are motivated by creating an atmosphere and environment of trust, where the personnel do not sense the necessity to reserve knowledge.* [Library staff, Case 7]

> *It may be prudent for the university to provide rewards for individuals who effectively use technologies and undertake knowledge management.* [Library staff, Case 9]

Maponya (2004) submitted that incentives are the biggest motivators, hence the absence of such makes librarians become reluctant about using knowledge management technologies. Roknuzzaman and Umemoto (2009) presaged that an organisational culture of sharing knowledge and expertise should be established with proper rewards and incentives within libraries at university levels to enhance knowledge management. Nicolas-Rocca and Burkhard

(2019) noted that motivation has a major influence on one of the knowledge management processes, thus, knowledge transfer.

A study by Garfield (2010) on knowledge management in the academia (university), librarians found that knowledge management technologies also included voluntary groups, also called communities of practice, organised and used by the libraries to enable researchers in a particular field of study. Some of the study participants indicated the essence of forming communities of practice, supported by knowledge management technologies, like groupware and intranet facilities. The following was cited by some of the participants:

> *In order for us to extensively use the available knowledge management technologies, there may be a need for us to form communities of practice (COP) and use various technologies at our disposal for communication and information flow. Such would ensure that we share our experiences in our regional campuses*. [Library staff, Case 11]

> *We could create an online knowledge hub that provides suggestion and best practice delivery of services from amongst the library staff members. This would in turn enhance the sharing of ideas, opinions and hence knowledge.* [Library staff, Case 13]

According to Parirokh, Daneshgar, and Fattahi (2008) communities of practice enhance knowledge creation and sharing within the particular community, thereby enhancing knowledge management practices. In view of the foregoing findings, it has emerged that though the promotional methods can be extrapolated from the external variable construct in the Technology Acceptance Model; such methods are adequately explained by the Diffusion of Innovation Theory by Rogers (2003) through the communication channel construct, which details that communication channel has the capacity of creating and changing attitudes held by individuals. Medlin (2001) avowed that advocates of any technology should advance methods of distributing information about the technology.

Apart from the promotional methods, the other strategy of enhancing the use of knowledge management technologies pertains to the acquisition of relevant knowledge management technologies. Of interest, the following statements were pronounced:

> *The university should avail to the library funds to purchase the latest versions of computers. As library professionals we would want to undertake video conferencing as we are scattered across the divide, with these 'stone age' computer this cannot be undertaken; hence the need for new computers.* [Library staff, Case 7]

> *For the library staff members to be able to undertake knowledge related initiatives they should have a separate repository housing all the knowledge embedded within the staff members.* [Library staff, Case 9]

> *The university should consider establishing and installing a database that is only oriented to knowledge created or generated by library staff members*. [Library staff, Case, 11]

> *There is a need for the library to increase the network bandwidth to facilitate effective interconnectivity*. [Library staff, Case 13]

> *There is a possibility that a user needs analysis was not adequately done in the acquisition of some on the technologies we have in place.* [Library staff, Case 14]

Laudon and Laudon (2000) stated that Information Communication Technologies tools and applications that could be used in knowledge management within organisations are innumerable; the only thing that organisations have to do is to make sure that the ones they choose are relevant to the needs of the employees and the organisation at large. Lee (2005) averred that the underutilisation of most technologies in libraries is usually because the technologies do not meet user needs. In addition, Ugwu and Ezema (2010) revealed that the ineffective usage of knowledge management technologies was mostly due to the inadequacy of the technologies in meeting the user requirements.

The study found out that there was need for the library management, along with the university at large, to devise a policy and strategic plans relating to knowledge management. One of the participants noted the following:

> *Due to the importance of this practice in the provision of adequate services to the library users, the management should draft a policy document addressing knowledge management issues.* [Library staff, Case 1]

> *Strategic plans provide direction for an organization. Hence including knowledge management in the library's strategic plans is an indispensable strategy in enhancing this practice.* [Library staff, Case 5]

The researchers also noted that there was a general lack of policy documents that related to the use of knowledge management technologies. The only evident document was the ICT use policy, which was generic in nature, without emphasis on the technologies understudy. Hayes (2004) stated that even though most university librarians believe in knowledge management; they lack sufficient policy documents providing direction for the application of the practice. Jain (2012) suggested that a strategic plan for the university library should also focus on knowledge management. Such a focus would ensure the provision of high quality, sharable, relevant and authoritative information for teaching, learning, research and management; at the same time developing a culture that supports collaboration and sharing of knowledge as a routine way of working and providing library services.

The above testimonials and sentiments on strategies to enhance the use of knowledge management technologies demonstrate that the use of knowledge management technologies to harness and foster knowledge management related issues cannot be overemphasised. Such strategies, according to Venkatesh and Davis (1996), can be extrapolated within the external variables construct of the Technology Acceptance Model, while Rogers (2003) in the Diffusion of Innovation Theory categorised these within the social system, and emphasised that these entailed a set of organised elements engaged in problem solving to realise a mutual goal.

CONCLUSIONS AND WAY FORWARD

The major conclusion that has emerged from this study is that though there are synchronous and asynchronous knowledge management technologies, the library staff members tended to prefer asynchronous ones. It also emerged that there are institutional and individual factors that depressed the use of knowledge management technologies by library staff members. As a way forward, it may be pertinent for the university and library management to undertake various forms of training and development to capacitate the library staff members of the use of knowledge management technologies. There is also a need for the acquisition of knowledge management technologies, however, such acquisition should be done upon having an extensive user needs analysis for collective decision making. The library management should also

encourage staff members to take an initiative-taking stance in knowledge management, through establishment of online communities of inquiries and communities of practices. The library network, bandwidth, should also be increased to ensure adequate use of technologies, particularly online ones.

In relation to the Technology Acceptance Model by Venkatesh and Davis (1996), it has emerged that the theory cannot hold its own in predicting and explaining the acceptance and use of technology. It arose from the study that this theory can be integrated and infused with other theories, like the Selective Exposure Theory by Klapper (1960), the Diffusion of Innovation Theory by Rogers (2003), the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh, Morris, Davis, and Davis (2003) to make it more robust.

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