

# Use of ICTs in Knowledge Management for Enhanced Institutional Sustainability

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## Abstract

*Rationale of Study* – The purpose of this paper is to identify and empirically assess the role of ICTs in enhancing knowledge management initiatives in Kenyan universities as a means to achieve institutional sustainability. The study assesses the knowledge management processes, identifies the ICT tools and technologies in use to enhance knowledge management of students' information; and proposes a framework for the integration of ICTs in knowledge management.

*Methodology* – This paper employed a quantitative research method using a descriptive approach, where one public and one private Kenyan university in Meru County were sampled. Using purposive sampling, an online questionnaire was used for data collection from staff within faculty, academic registrar, ICT, students' finance, and library departments. The response rate was 75%. Descriptive statistics techniques were used to analyse the data.

*Findings* – The study revealed that universities have invested in ICT tools and technologies to support knowledge management processes. However, they have not reaped full benefits due to their underutilisation. The results indicated that the institutions can achieve competitiveness, efficiency and effectiveness and improved decision making through full utilisation of these ICT tools and technologies.

*Practical Implications* – This research contributes to the need for ICT utilisation in knowledge management processes to enhance institutional sustainability through competitiveness, improved decision making, efficiency and effectiveness within the higher education sector.

*Originality* – This is an original and empirical study conducted in two universities in Kenya.

## Keywords

ICTs, knowledge management, students' information, Universities, sustainability, Kenya

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## 1 Introduction

Change has been happening at an uneven pace in any growth-oriented industry, and the education sector has not been an exception. Rapid growth in the field of education has made governance in the academic sector a very complex task. The 21<sup>st</sup> century has witnessed tremendous advancements in technology which has led to far-reaching developments in the administrative system. Cost-effective technology combined with the flexibility in learning and administrative activities is essential to enhance efficiency (Krishnaveni & Meenakumari, 2010). The Kenya Vision 2030, envisions Kenya as a knowledge-based economy; that is highly reliant on effective Knowledge Sharing and management practices (Government of Kenya (GoK), 2007) The Kenya Vision 2030 articulates knowledge creation and management as the fundamental aspect of growth and competitiveness in the Kenyan economy.

A record is defined as “a document made or received in the course of a practical activity as an instrument or a by-product of such activity, and set aside for action or reference (Duranti & Xie, 2012). This implies that records are first documents, that is, information affixed to a medium, and second that they are a special kind of document, the residue of action, purposely kept as evidence on which to base subsequent activities. Universities document their day to day activities through records. These records provide evidence of the processes carried out and decisions made; support policy formulation; protect the interests of the universities; and support them to conduct business and deliver consistent and equitable services (Musembe, 2016). University records include, but are not limited to, minutes; correspondence; memoranda; financial records; published materials; audio files; still images and videos; and electronic records, among others. The records can be categorised into: personnel (staff and faculty), student, alumni, finance, research administration, health and safety, and general administration and management records. Without these records, there would be no form of accountability in universities. Unfortunately, records management in many institutions is plagued by poor organisation, inefficient filing, poor storage and irregular disposition which results in inability to prove decisions made or even demonstrate that policies and procedures were correctly followed (Allison & Otuza, 2017). This derails the university’s ability to mine important information from these records resulting to poor knowledge management.

According to Omona et al. (2010), knowledge comes from information applied meaningfully, that is, processed from available organisational data. Knowledge includes values, experience, insights and contextual information used in the performance of activities. Knowledge may also be referred to as facts, skills and information acquired through experience or education based on both theoretical and practical understanding of a subject (Nonaka et al., 2000). The day to day activities

in a university which consist of a number of academic and administrative processes produce knowledge and these needs to be managed to enable work to be done efficiently, reuse best practices and reduce costs associated with having to create new knowledge for each assignment. In progressive universities, knowledge has been recognised as a valuable resource that needs to be managed well to enable the institutions to benefit fully from their intellectual capital to enhance their competitive advantage and find solutions to challenges in their operational environment which is increasingly becoming more complex (Omotayo, 2015).

Agarwal and Marouf (2014) opine that universities will need to strive for innovative knowledge in order to survive and excel within the changing face and increased challenges of higher education. They must determine the type of knowledge to invest in. For the institutions to be successful, the focus must be on capitalising difficult to replace, and high value added knowledge and skills. This type of knowledge would be fundamental to the success of teaching and research, student retention, and other financial viability goals of the university.

Knowledge management refers to intellectual resources and information systems in which an organisation creates, captures, stores, uses and applies knowledge to support and improve its performance within a business environment (Nonaka et al., 2000). In universities, knowledge management involves the process of systematic approach to the capture, structure, management and dissemination of knowledge throughout the university. Therefore, knowledge management is a tool that universities can use to integrate processes and improve their operational efficiencies and achieve a competitive edge. The value of knowledge management relates directly to the effectiveness with which the managed knowledge enables the members of the organisation to deal with current situations and effectively envision and create their future. Without on-demand access to managed knowledge, every situation is addressed based on what the individual or group brings to the situation with them. With on-demand access to managed knowledge, every situation is addressed with the sum total of everything anyone in the organisation has ever learned about a situation of a similar nature (Vipinkumar et al., 2013).

The importance of knowledge and its management has been established for many decades. Knowledge is progressively considered as a critical component for organisations to be competitive, innovative and sustainable. Knowledge management is meant for the maximisation of the organisation's knowledge assets and guarantee more effective knowledge practices, improved organisational behaviour and better performance through knowledge acquisition, creation, refinement, storage, transfer, sharing, and utilisation which can be effectively achieved by the use of information communication technology (Kanwal, 2017).

Information and communication technology (ICT) on the other hand is used as an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems, as well as the various services and applications associated with them, such as videoconferencing and distance learning (Hennessy et al., 2010). They further state that ICT is a principal driver of economic development and social change worldwide. In many countries, the need for economic and social development is used to justify investment in educational reform. ICT plays a major role in all aspects of national life: in politics, in economic life, as well as in social and cultural development. It is rapidly transforming the way people do business, access information and services, communicate with each other, and even entertain themselves.

Information and communication technologies are tools that facilitate universities to create, store and share information (Subashini et al., 2012). Today, the implementation of knowledge management initiatives has become easier with the help of these technological tools. Indeed, ICTs are a major determinant of success of knowledge management efforts in universities (Omona et al., 2010). One of the reasons for this prominent role of ICTs in knowledge management processes is the fact that these tools support knowledge processes and employees by providing ready access to organised information, improved communication and interaction between knowledge workers; and support systems that facilitate learning and decision making processes. Universities must make the best use of ICT tools and technologies to facilitate effective knowledge management. Integration of ICT in knowledge management is key in enhancing university sustainability as it is the driver and catalyst for growth in the universities.

Institutional sustainability can be defined as the effectiveness of implementation of the purposes of the institutions (Wu et al., 2018). For the operationalisation of this, this paper focuses on three indicators: competitiveness, efficiency, effectiveness and adaptability to measure institutional sustainability. The paper aims at assessing and describing the impacts of using ICTs in knowledge management for enhanced university sustainability.

## **2 Problem statement**

With ICT, management of students' data in education institutions has become much easier. It has brought transformation and efficiency in the way many management tasks are handled as well as changed how knowledge is processed, stored and managed, making record keeping, document processing, clerical and such other activities less taxing. Knowledge transfer has been made easier and faster, and information about an institution can now be effectively disseminated to the entire

world. It has also made access to these institutions easy, and applicants can now process admission, fee payment, registration and several other services online (Pohekar, 2018)

There is however an indication that Kenyan institutions of higher learning are yet to get satisfactory benefits from ICT. The inefficient way by which information is managed in Kenyan universities is of great concern especially to the stakeholders of university education in Kenya (Hadullo et al., 2018). There are no common standardised strategies, programmes, policies and procedures for management of knowledge and information resulting in underutilisation of available knowledge. New strategies and approaches are needed to enhance the use of ICTs to support knowledge management in universities. Therefore, there is a need to examine the use of ICTs for knowledge management in regard to students' information to enhance institutional sustainability (Egoeze et al., 2018)

This study assesses the use of ICTs in knowledge management for enhanced university sustainability. Specifically, the objectives of the study are to: assess the knowledge management processes in Kenyan universities; identify ICT tools used to enhance the management of students' information; and propose a framework for the adoption of ICT for the management of students' information.

Existing literature does not fully examine, explain and articulate the benefits of ICT tools and technologies in knowledge management. This information would guide policy makers and provoke the university administrators to ensure total and effective application of ICT in the management of student's information to enhance university sustainability.

### **3 Review of Literature**

This section examines the knowledge management processes as well as the use of ICT tools and technologies to enhance knowledge management.

#### **3.1 Knowledge Management Processes**

Knowledge management is the art of transforming information and intellectual assets into creating value and meeting tactical and strategic requirements. Several scholars (Long, 1997; Probst et al., 2000; Spender & Grant, 1996) have identified various knowledge management processes. However, the general agreement is that the core processes include: creation, use, and transferring or sharing of knowledge as shown in the Figure 1 below.

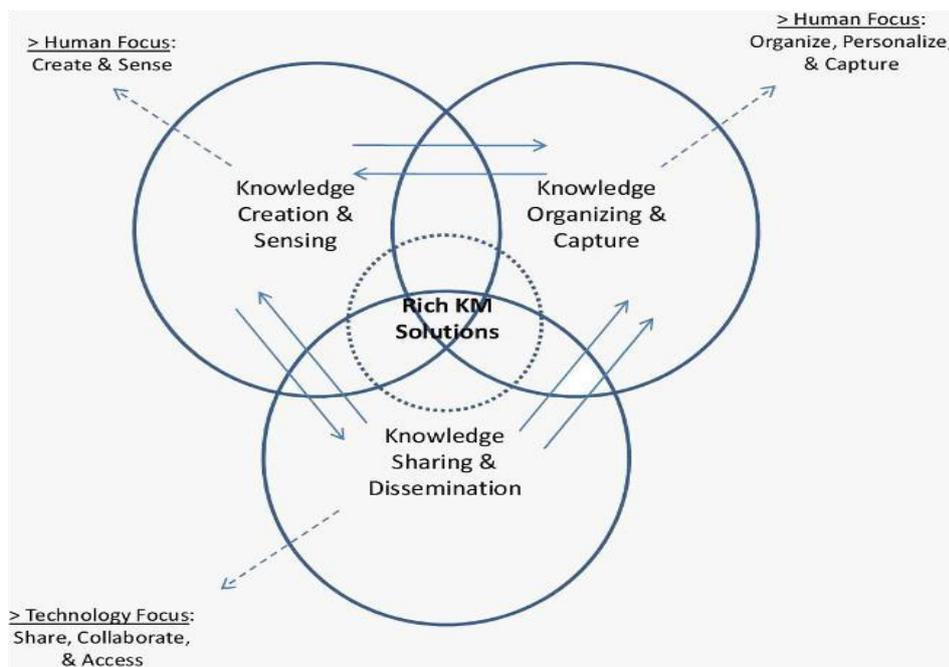


Figure 1 - Knowledge Process Model (Botha et al., 2008)

Knowledge creation includes knowledge acquired by an organisation as well as that knowledge developed within it. In a university setting, knowledge is created from the use of outside consultants as well as borrowing from within departments at the institution as well as other stakeholder institutions. The translation of data and information into symbols that others can understand is referred to as codification which encompasses the sub-processes of storing, categorising, and, mapping of tacit knowledge and rendering it explicit. The use of databases, directories, procedural handbooks, and email messages are examples of coded knowledge in a university setting (Verma et al., 2012). They further point out that knowledge transfer is the set of sub-processes used to data-mine, distribute and share organisational knowledge and this is key to an organisation's success, quality, and competitiveness. In universities, development of publications, presentations, websites, white papers, policies, and reports are examples of mechanisms used to transfer knowledge. These processes seek to improve efficiency and increase the competitive edge for any institution.

With the emergence of a knowledge economy, knowledge and information are key ingredients of development, competitiveness and innovation (Sulisworo, 2012). Any organisation aiming to develop a knowledge base first needs to identify the sources of knowledge available, and then to capture and manage these resources properly. The success of knowledge management initiatives does not simply depend on documenting, managing, and archiving of generated knowledge, but requires further research to ensure that knowledge and evidence of what works are contextualised,

enriched, interpreted, debated and disputed in order for learning to occur among a multitude of stakeholders with divergent interests and world views (Keijze et al., 2006). Knowledge is relevant when an organisation recognises its relevance or mentally constructs it.

### **3.2 Use of ICT Tools and Technologies to enhance knowledge management**

According to (Botha et al., 2008), four key enablers of knowledge management are culture, infrastructure, measures and technology. Tremendous advancement in ICT has created new avenues for it to play an important role in meeting the prevailing challenges related to sharing, exchanging and disseminating knowledge in higher education (Stephen & Shanmugam, 2017). To ensure easy and near-costless sharing of information in this knowledge age, good ICT infrastructure is necessary for any successful knowledge management practice in an organisation (Toro & Joshi, 2013; (Quadri, 2012); (Bwalya, 2009)Bwalya, 2009). (López et al., 2009) argued that the existence of networks that spread information throughout the whole firm helps decentralise decision-making power and initiative. In addition, the use of the Internet and World Wide Web has been rapidly expanding in universities and making positive impacts in support of knowledge exchanges, sharing and collaboration. This has resulted in the implementation of ICTs to support knowledge management systems.

## **4 Theoretical Framework**

There are several theories that back the use of ICT tools and technologies in knowledge management. Three theories that grounded this study are: Knowledge-based Theory of the Firm, Adaptive Structuration Theory (AST), and the Unified Theory of Acceptance and Use of Technology (UTAUT).

### **4.1 Knowledge Based Theory**

The proponents of knowledge-based theory of the firm argue that because knowledge-based resources are usually difficult to imitate and socially complex, heterogeneous knowledge bases and capabilities among firms are the major determinants of sustained competitive advantage and superior corporate performance. According (Sveiby, 2001), this theory has three components which are individual competence, which explains that the knowledge gained from another person adds to their knowledge but does not leave the originator of the knowledge. Secondly, the internal structures component shows how the organisation benefits from the knowledge gained by their employees. This is because knowledge effectively shared is knowledge doubled which is different from the individual perspective. Individuals think knowledge shared results in loss of opportunity, if this loss results in extra work to loss of career opportunity and no organisational rewards and recognition. These, among others, explain why individuals fear to share knowledge. Internal

structures also include management type and existence of knowledge management strategies and policies. Thirdly, the external structures explain how the organisation interacts with and gains from the knowledge of its stakeholders. This theory helped the researchers to understand how to integrate the three components in knowledge management that are very important for the full realisation of the organisation sustainability.

#### **4.2 Adaptive Structuration Theory (AST)**

Adaptive Structuration Theory (AST), based on Anthony Giddens' structuration theory, addresses issues of human behaviour in the context of technology based on social structure. AST posits that the way technology is adapted by an organisation is determined by the technology, the organisation's environment, the task, and the way structures emerge and update throughout the appropriation process (Ajjan et al., 2016). The theory helps to determine how the appropriation of technology, organisational structure and tasks help in the technology use outcomes. This assisted the study to establish the effect of use of ICT tools and technologies in the various knowledge management processes.

#### **4.3 The Unified Theory of Acceptance and Use of Technology (UTAUT)**

User acceptance is key in the development of any information system within an organisation. The Unified Theory of Acceptance and Use of Technology (UTAUT), as described by (Venkatesh et al., 2012), is the most widely applied theory to assess the use of technology. With universities investing in ICT tools and technologies to ease work and improve performance, the UTAUT model was used to assess their influence. The four key constructs in this theory are: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions. Gender, age, experience, and voluntariness of use are moderating variables assumed to influence the four key variables on usage intention and behaviour. UTAUT's core constructs and moderating variables were applied in assessing the influence of the use of ICT tools and technologies in the knowledge management processes (Nguyo et al., 2015).

Extant literature indicates that there exist various theories on knowledge management, however, the theoretic basis for the use of ICT for its enhancement is ineffective. This results to a research gap in the current body of knowledge. To solve the emerging challenges and to bridge the research gap identified, a framework was developed.

### **5 Methodology**

This section explains the research design, research method, study population, sample and sampling frame, data collection, data analysis and presentation. According to Orodho (2003), research design is the structure, scheme, plan, outline or strategy of investigation used by researchers to give

answers to the research questions. A descriptive research study employing survey research method was conducted in two Kenyan universities whose main campuses are located in Meru County, with the aim of establishing and describing the impact of the use of ICT tools and technologies in knowledge management to enhance university sustainability. This is informed by Mugenda (2008) who argues that descriptive research design seeks to obtain information that describes existing phenomena by seeking respondents' opinions, behaviour, perceptions, experiences, attitudes or values. They further add that a descriptive approach uses a pre-planned design for analysis that allows research findings to be presented through simple statistics such as tables and measures of central tendency. Additionally, Kothari (2004) asserts that descriptive design has adequate provisions to safeguard against biases and enhances the maximisation of reliability.

The target population used was the employees in departments that work and interact directly with students' records. Purposive sampling was used to select 60 respondents from a population of 150 members. Online questionnaires were distributed to one public and one private chartered university in Meru County. The universities are Meru University of Science and Technology, and Kenya Methodist University. The specific respondents included in the study were staff from the academic registrar's office, faculty, students' finance, ICT and the library. The data was analysed using SPSS (version 25), also known as Predictive Analytics Software (PASW), and Microsoft Excel. The findings are presented using charts, graphs, frequencies and means. The results have been used to guide the development of a framework and conclusions and recommendations have been drawn.

## **6 Findings and Discussions**

The findings of the study are presented and discussed in this section. Data analysis was done based on the specific objectives of the study.

Table 1 presents the details of the respondents. As explained earlier, a sample of 60 respondents was selected from a total population of 150 employees that work in departments interacting directly with students' records ranging from Diploma holders to PhD holders. From the 60 online questionnaires administered, 45 were received. This represents a 75% response rate. According to Mugenda (2008), a response rate of 50% is adequate, 60% is good and from 70% is very good. On this basis, the response rate for the study was very good.

Table 1 – Respondents

Department	Population	
	MUST Population	KeMU Population
Library	13	21
ICT officers	12	13
Finance	4	6
Registrar Academics office	18	22
Chairs of departments	18	23
	<b>65</b>	<b>85</b>
<b>Total Population</b>	<b>150</b>	
<b>Sample</b>	<b>60</b>	
Respondents	45	% Respondents =75%

The majority (41.9%) of the respondents indicated that they had worked for between 6 and 10 years in their respective universities; 27.9% had worked for between 1 to 5 years; while 30.2% of the respondents had worked for over 11 years. This implies that the respondents had gained adequate experience over a period of time from which the institutions can tap for sustainability.

### 6.1 Knowledge Management Processes in Universities

The study assessed the status of knowledge management processes in the universities under study. The results are presented using percentages in the paragraphs that follow and for each a discussion is provided.

A question on the awareness of knowledge management was asked and the results revealed that 93% of the respondents were aware of knowledge management while 7% were not. The study revealed that 84% recognised knowledge management as part of the university's assets base while 11% indicated it is not; and 5% could not tell. The awareness of knowledge management would assist the institutions in their operations as well as ease the implementation of the strategies.

The study established that 55% of the respondents had not received any form of training on knowledge management due to lack of formal knowledge management strategies in their institutions. 45% of those who had received some form of training did not directly get this from their institutions. This implies that full benefits of knowledge management could not be realised

as the employees lacked the required skills that the universities can utilise for institutional sustainability.

The findings on records retention policy revealed that 58.1% of the respondents agreed that the universities have a records retention policy, 9.3% indicated that they did not have while 32.6% indicated that they did not know. The findings show that 87.5% of the respondents agreed that the policy addressed admissions, fees, students' accounts and students' academic status proving that the institutions are lacking the knowledge management policy which would aid in the management of students' information for their competitive advantage.

Despite the institutions neither having clearly defined knowledge management processes nor incentives for knowledge sharing, 76.7% of the respondents noted that colleagues willingly shared knowledge amongst themselves at their workplace through established formal channels like meetings, workshops, seminars and conferences with more than 80% of them stating that colleagues have a level of trust and can easily learn from each other. This reveals that the management have a crucial role to play in ensuring that their workforce adopts and use ICT in knowledge management processes.

According to 40.9% of the respondents, the most preferred channel of obtaining general information was from the Internet. This is because it is easily accessible. On the other hand, 59.1% obtained institution-specific information from the university's Intranet, information resources as well as from colleagues. This demonstrates the need for an institutional knowledge management system to create proper and formal channels for the creation, use and sharing of knowledge.

The results from this study show that employees' awareness, management support, employee training, policy, incentives and proper defined channels on knowledge management will aid the universities to attain institutional competitiveness, efficiency and adaptability resulting in sustainability. This agrees with the study conducted by Omona et al. (2010) which indicates supporting the collective expertise of an institution's employees and partners is an important source of competitive advantage and a key to her success.

## **6.2 Use of ICT Tools and Technologies in Knowledge Management Processes in the University**

A status on the use and awareness of ICT tools and technologies in managing students' information was sought from the respondents. It was noted that 3.4% of the respondents indicated using manual filing and storage systems, 8.5% were using the students' information systems while the majority (88.1%) of the respondents indicated using both manual and students' information systems. With the above response, retrieval of students' information would have been made easier,

more accurate and timely had the institutions fully utilised information systems leading to better decision making (Krishnaveni & Meenakumari, 2010).

An assessment on enhancing service efficiency, competitive advantage and adaptability from the use of ICT tools and technologies in the knowledge management processes in the two universities was summarised. Several statements requiring the respondents to indicate the extent to which they agree with each of the impacts listed above was drawn on a scale of 1-5 where: 1-Strongly Disagree, 2-Disagree, 3-Not sure, 4-Agree, 5-Strongly Agree was used. From the responses, mean and standard deviation were used to interpret and generalise the results. The findings are shown in Table 2 below.

Table 2: Impacts of ICT Tools and Technologies on Services efficiency, competitive advantage and adaptability

	Mean	Std. Deviation
Knowledge Management practices are adequately covered in the University policies	2.8b3	1.116
University has invested in student information systems to aid in generation of knowledge	4.42	0.855
Knowledge application is achieved through dissemination	3.72	1.111
Knowledge application enables collaboration among university stakeholders	3.98	0.982
Knowledge sharing leads to improved decision making and capability among employees	4.44	0.725
ICT tools and technology aids in the exchange of knowledge in the university	3.76	1.088
ICT tools and technology aids in knowledge creation, use and sharing	4.07	1.041

The respondents disagreed that knowledge management practices were adequately covered in the university policies as indicated by a mean of 2.83 with a standard deviation of 1.116. The respondents were in agreement that knowledge application is achieved through dissemination with a mean of 3.72 and standard deviation of 1.111. Knowledge application enables collaboration among university stakeholders with the mean of 3.98 and standard deviation of 0.982. ICT tools and technologies aid in the exchange of knowledge in the university with a mean of 3.76 and standard deviation of 1.088. The respondents also strongly agreed that the universities have invested in student information systems to aid in the generation, use and sharing of knowledge with a mean of 4.42 and a standard deviation of 0.855. Knowledge sharing leads to improve

decision making and capability among employees had a mean of 4.44 and standard deviation of 0.725 while ICT tools and technology aids in the exchange of knowledge in the university had a mean of 4.07 and standard deviation of 1.041. The findings clearly show that ICT tools and technologies can influence knowledge creation, use and sharing. This implies that if the universities apply them effectively, they will reap great benefits.

Additionally, the study sought to establish the type of ICT tools and technologies the universities' employees use for managing the knowledge processes. A list was provided to the respondents to tick their preferred choices. These ICT tools and technologies included the Internet, Intranet, Management Information System, email, videoconferencing, Customer Relationship Management system, expert networks, data warehousing, search engine, content management, knowledge portals, data support systems, eLearning systems, groupware, data management systems, community of practice and cloud computing applications. It was noted that the most preferred tool for knowledge creation was eLearning systems (64%); for knowledge use was the Internet (70%); and for knowledge sharing was email (66%). The least preferred tool for knowledge creation and knowledge use (11% and 25% respectively) were groupware systems while for knowledge sharing was data warehousing systems (18%). These ICT tools and technologies, if well harnessed, could help in codifying knowledge in a common repository and using the same to tap and share tacit knowledge from and among employees within the institutions.

Further analysis was done to determine the relationship between the dependent variable - the use of ICT tools and technologies in knowledge management in enhancing the university's competitive advantage - against the independent variables. The analysis was done on the relationship of ICT tools and technologies with knowledge creation, knowledge use and knowledge sharing as well as the need for formal knowledge management procedures, guidelines and policies. The result from the study indicated that R square was 0.833 implying that the weighted value of the use of ICT tools and technologies explained 83.3% of the positive change on knowledge management processes in the universities. The analysis of the variance showed that the use of ICT tools and technologies significantly influences knowledge management processes where the actual P-value = 0.001 which is typically a small P-value ( $P < 0.05$ ). The findings showed that there is a significant relationship between the ICT tools and technologies in knowledge management processes. ICT tools and technologies affect the knowledge creation process ( $t = 8.0454$ ,  $p = 0.0001$ ), knowledge use ( $t = 3.9081$ ,  $p = 0.0003$ ), knowledge sharing ( $t = 6.4763$ ,  $p = 0.0001$ ) and need for formal procedures, guidelines and policies on knowledge management processes ( $t = 2.8482$ ,  $p = 0.0051$ ). These results are as shown in Table 3 below.

Table 3 - Coefficients for the Use of ICT Tools and Technologies on Knowledge Management Processes in the University

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.3831	0.1201	3.1892	0.0021
ICT tools on Knowledge Creation	0.2613	0.0323	8.0454	0.0001
ICT tools on Knowledge Use	0.1312	0.0332	3.9081	0.0003
ICT tools on Knowledge Sharing	0.3694	0.0571	6.4763	0.0001
Need for formal KM procedures, guidelines and policies	0.1443	0.0511	2.8482	0.0051

The results discussed above revealed that universities that use ICT tools and technologies are able to achieve competitive advantage which is consistent with the research conducted by Stephen and Shanmugam (2017) who posited that use of ICT tools and technologies can be used to improve efficiency and increase competitive edge through knowledge capturing ,sharing, distribution, using and transferring across an organization.

Whereas the ICT tools and technologies are in use in the management of students' information, benefits of these have not been fully realised. This is depicted by the assessment of the status of knowledge management within the two universities. A total of 40.9% of the respondents indicated that they were at the intermediary stage, 34.1% at the growth stage, 20.5% at the introduction stage and 4.5% said it was not in existence at all. Thus, 81.9% indicated that knowledge management practices were adequately conducted in the two universities while 18.1% indicated that they were not adequate. This demonstrates that knowledge management practices utilising ICT tools and technologies are underway in the universities to achieve institutional sustainability. To address the research issues raised in this study, the authors propose a framework for use of ICT tools and technologies in knowledge management.

### 6.3 Framework for Use of ICT tools and Technologies in Knowledge Management

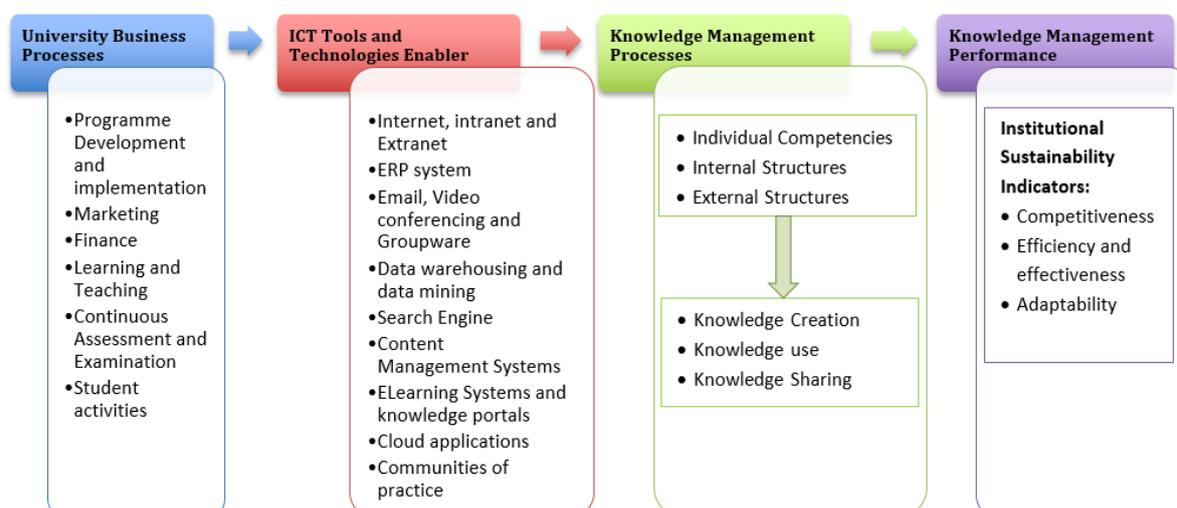
For any institution to effectively benefit from the use of ICT tools and technologies in knowledge management, several prerequisites need to be in place. These include a knowledge management policy and an institutional knowledge management strategy which stipulates well defined processes to tap the knowledge held by her employees.

The study revealed that 91% of the respondents indicated their institutions had no knowledge management policy in place. Whereas 64% of the respondents stated that their institutions have

documented procedures, 70% of the respondents specified that knowledge management processes for creation, use and sharing of knowledge were not well defined. There is no central point of reference for students' information leading to delayed university's operations. This shows that knowledge and information within the universities are underutilised hence affecting proper and timely decision making.

In spite of 70% of the respondents stating that the knowledge management strategy needs to be implemented at all levels of the universities, it was noted that 55% of respondents stated that the top management does not actively support knowledge management processes. This implies that for any knowledge management strategy to be successful, the top management requires to champion the process (García-Sánchez et al., 2015). For effective use of ICT tools and technologies in knowledge management processes, good leadership, incentives programmes, as well as adoption of a knowledge management framework that utilises ICT's tools and technologies are required within an institution.

The proposed framework addresses the research gap identified in the study to aid universities to effectively use ICT tools and technologies in the knowledge management processes to realise enhanced institutional sustainability.



**Figure 2:** Proposed Knowledge Management Framework Utilizing ICT Tools and Technologies of Students' Information to achieve Institutional Sustainability

## 7 Conclusion

In the current knowledge economy, for higher education institutions to achieve competitiveness, effectiveness and efficiency as well as adaptability, it is crucial to implement a knowledge

management policy that spells out clearly the formal procedures and incentives for the creation, use and sharing of knowledge. In addition, it is important to include all stakeholders (management, faculty and administrative staff) of the institutions in the knowledge management processes. This study sought to explore and describe the status of utilisation of ICT tools and technologies in knowledge management of student information within universities with the aim of achieving institutional sustainability. It revealed that universities were not effectively utilising ICT tools and technologies in the management of student information which has negatively impacted on their sustainability. The findings resulted in the development of a framework that would guide the universities' stakeholders in the integration of ICT tools and technologies in knowledge management to achieve institutional sustainability. This framework will guide the development of knowledge management policies, strategies and contribute to the body of knowledge.

## 8 Recommendations for further research

The study was carried out in two Kenyan universities; the same study should be carried out in the other sectors to determine if the same results will be obtained. Further research should be done on the implementation of the proposed framework to allow an in-depth analysis of the various knowledge management strategies proposed and how they may influence the performance of the organisations.

## References

- Agarwal, N., & Marouf, L. (2014). Initiating Knowledge Management in Colleges and Universities: A template. *International Journal of Knowledge Content Development & Technology*, 4, 67–95. <https://doi.org/10.5865/IJKCT.2014.4.2.067>
- Ajjan, H., Kumar, R., & Subramaniam, C. (2016). Information technology portfolio management implementation: A case study. *Journal of Enterprise Information Management*, 29, 841–859. <https://doi.org/10.1108/JEIM-07-2015-0065>
- Allison, G., & Otuza, C. (2017). Millitating Factors On The Efficient Management Of Students' Record Among Registry Staff In Academic Institutions (A Case Study Of Babcock University). *Advances in Social Sciences Research Journal*, 4. <https://doi.org/10.14738/assrj.418.3633>
- Botha, A., Kourie, D., & Snyman, R. (2008). *Coping with Continuous Change in the Business Environment—1st Edition*. <https://www.elsevier.com/books/coping-with-continuous-change-in-the-business-environment/botha/978-1-84334-355-4>
- Bwalya, K. J. (2009). *Role Of Reliable Policies In Promoting Research And Knowledge Management: The African Context*. *Journal of Knowledge Management Practice*, 10(No. 4). <http://www.tlinc.com/articl209.htm>
- Duranti, L., & Xie, S. (2012). *Knowledge Management & Records Management Establishing Relationships for Common Development*. [https://www.academia.edu/11328169/Knowledge\\_Management\\_and\\_Records\\_Management\\_Establishing\\_Relationships\\_for\\_Common\\_Development](https://www.academia.edu/11328169/Knowledge_Management_and_Records_Management_Establishing_Relationships_for_Common_Development)
- Egoeze, F. E., Misra, S. M., Maskeliunas, R., & Damasevicius, R. (2018). (PDF) *Impact of ICT on Universities Administrative Services and Management of Students' Records: ICT in University Administration*. ResearchGate. <http://dx.doi.org/10.4018/IJHCITP.2018040101>
- García-Sánchez, E., García-Morales, V., & Bolívar-Ramos, M. (2015). The influence of top management support for ICTs on organisational performance through knowledge acquisition, transfer, and utilisation. *Review of Managerial Science*, 11, 19–51. <https://doi.org/10.1007/s11846-015-0179-3>

- Government of Kenya (GoK). (2007). *Kenya Vision 2030 (Popular Version) | Kenya Vision 2030*.  
<https://vision2030.go.ke/publication/kenya-vision-2030-popular-version/>
- Hadullo, K., Oboko, R., & Omwenga, E. (2018). Status of e-learning Quality in Kenya: Case of Jomo Kenyatta University of Agriculture and Technology Postgraduate Students. *The International Review of Research in Open and Distributed Learning*, 19. <https://doi.org/10.19173/irrodl.v19i1.3322>
- Hennessy, S., Onguko, B., Harrison, D., Ang'ondi, E. K., & Namalefe, S. (2010). *Developing the use of information and communication technology to enhance teaching and learning in East African schools: Review of the literature*. HEART.  
[https://www.heart-resources.org/doc\\_lib/developing-use-information-communication-technology-enhance-teaching-learning-east-african-schools-review-literature/](https://www.heart-resources.org/doc_lib/developing-use-information-communication-technology-enhance-teaching-learning-east-african-schools-review-literature/)
- Kanwal, S. (2017, August 19). *Knowledge Management Practices in Higher Education Institutions: A Systematic Literature Review*.
- Keijze, K., Ørnemark, C., & Engel, P. (2006). *Networking for Learning: The Human Face of Knowledge Management?* ECDPM. <https://ecdpm.org/publications/networking-learning-human-face-knowledge-management/>
- Kothari, C. R. (2004). *Research methodology: Methods & techniques*. New Age International (P) Ltd.  
<http://public.eblib.com/choice/publicfullrecord.aspx?p=431524>
- Krishnaveni, Dr. R., & Meenakumari, J. (2010). Usage of ICT for Information Administration in Higher education Institutions – A study. *International Journal of Environmental Science and Development*, 282–286.  
<https://doi.org/10.7763/IJESD.2010.V1.55>
- Long, D. G. D. (1997). *Building the Knowledge-Based Organization: How Culture Drives Knowledge Behaviors*.  
 /paper/Building-the-Knowledge-Based-Organization%3A-How-Long/5644e8ee7e847949de218d94f13205ea9a1cdd4
- López, S., Peón, J., & Ordás, C. (2009). *Information Technology as an Enabler Of Knowledge Management: An Empirical Analysis* (Vol. 4, pp. 111–129). [https://doi.org/10.1007/978-1-4419-0011-1\\_8](https://doi.org/10.1007/978-1-4419-0011-1_8)
- Mugenda, A. (2008). *Social Science Research: Theory and Principles*. Text Book Centre.  
[https://textbookcentre.com/catalogue/social-science-research-theory-and-principles\\_8593/](https://textbookcentre.com/catalogue/social-science-research-theory-and-principles_8593/)
- Musembi, C. N. (2016). *Strategies for Improvement of Records Management in Enhancing Quality of Services in Institutions of Higher Learning: A Focus on Moi University, Kenya*. Undefined. /paper/Strategies-for-Improvement-of-Records-Management-in-Musembi/a39e323390d6a7a9edd9470949e15a14febfff2b
- Nguyo, P., Kimwele, M., & Guyo, W. (2015). *Influence of ICT on knowledge sharing in state corporations in Kenya: A case of the Kenya National Library Service*. 1, 1–21.
- Nonaka, I., Toyama, R., & Konno, N. (2000). SECI, Ba and Leadership: A Unified Model of Dynamic Knowledge Creation. *Long Range Planning: International Journal of Strategic Management*, 33(1), 5–34.  
[https://doi.org/10.1016/S0024-6301\(99\)00115-6](https://doi.org/10.1016/S0024-6301(99)00115-6)
- Omona, W., Lubega, J., & Weide, J. T. (2010). Using ICT to enhance Knowledge Management in higher education: A conceptual framework and research agenda. *International Journal of Education and Development Using Information and Communication Technology*, 6, 83–101.
- Omotayo, F. (2015). Knowledge Management as an important tool in Organisational Management: A Review of Literature. *Library Philosophy and Practice (e-Journal)*. <https://digitalcommons.unl.edu/libphilprac/1238>
- Orodho, J. (2009). *ELEMENTS OF EDUCATION AND SOCIAL SCIENCE RESEARCH*.
- Pohekar, D. (2018). *Role of ICT on Universities Administrative Services and Management*.  
[https://www.academia.edu/37929427/IRJET-\\_Role\\_of\\_ICT\\_on\\_Universities\\_Administrative\\_Services\\_and\\_Management](https://www.academia.edu/37929427/IRJET-_Role_of_ICT_on_Universities_Administrative_Services_and_Management)
- Probst, G., Raub, S., & Romhardt, K. (2000). *Managing Knowledge: Building Blocks for Success | Wiley*. Wiley.Com.  
<https://www.wiley.com/en-us/Managing+Knowledge%3A+Building+Blocks+for+Success-p-9780471997689>
- Quadri, G. (2012). Impact of ICT Skills on the Use of E-Resources by Information Professionals: A Review of Related Literature. *Library Philosophy and Practice (e-Journal)*. <https://digitalcommons.unl.edu/libphilprac/762>
- Spender, J.-C., & Grant, R. M. (1996). Knowledge and the firm: Overview. *Strategic Management Journal*, 17(S2), 5–9.  
<https://doi.org/10.1002/smj.4250171103>
- Stephen, G., & Shanmugam, T. (2017). *UTILIZATION OF ICT IN KNOWLEDGE MANAGEMENT AMONG LIS COMMUNITY IN ALAGAPPA UNIVERSITY -A STUDY*.
- Subashini, R., Rita, S., & Vivek, M. (2012). The Role of ICTs in Knowledge Management (KM) for Organizational Effectiveness. *Communications in Computer and Information Science*, 270, 542–549. [https://doi.org/10.1007/978-3-642-29216-3\\_59](https://doi.org/10.1007/978-3-642-29216-3_59)

- Sulisworo, D. (2012). *Enabling ICT and Knowledge Management to Enhance Competitiveness of Higher Education Institutions*. <https://doi.org/10.5296/ije.v4i1.1207>
- Sveiby, K.-E. (2001). A Knowledge-based Theory of the Firm to guide Strategy Formulation. *Journal of Intellectual Capital*, 2, 15. <https://doi.org/10.1108/14691930110409651>
- Toro(Gulavani, P., & Joshi, M. (2013). A Review of Literature on Knowledge Management using ICT in Higher Education. *International Journal Computer Technology and Applications*, 4, 62–67.
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, 36(1), 157–178. JSTOR. <https://doi.org/10.2307/41410412>
- Verma, A., Dharmani, P., & Kiran, R. (2012). Knowledge sharing for stimulating learning environment in institutions of higher technical education. *Technics Technologies Education Management*, 7(4), 1681–1691.
- Vipinkumar, V. P., Athira, P. V., & Mini, K. G. (2013). *Role of ICT in Knowledge Management*. 507–527. <http://eprints.cmfri.org.in/9855/>
- Wu, J., Lo, M. F., & Ng, A. W. (2018). Knowledge Management and Sustainable Development. In W. Leal Filho (Ed.), *Encyclopedia of Sustainability in Higher Education* (pp. 1–9). Springer International Publishing. [https://doi.org/10.1007/978-3-319-63951-2\\_175-1](https://doi.org/10.1007/978-3-319-63951-2_175-1)