Fall 6-2-2023

Knowledge Management Practice and Use of Information and Communication Technology: A Case Study of Northwest University, Kano

Karimatu Isa Maisango Dr
Northwest University, Kano, faridasanistores@gmail.com

Farida Sani Stores DR
Federal College of Agricultural Produce Technology, Kano, faridasanistores@gmail.com

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BY

[1]Karimatu Isa Maisango, PhD
Northwest University Library, Kano, Nigeria
karimatuisa66@gmail.com

[2]Farida Sani Stores PhD
Federal College of Agricultural Produce Technology Library, Kano, Nigeria
faridasanistores@gmail.com

Corresponding author:
faridasanistores@gmail.com

List of Abbreviations/Acronyms

COVID-19 - Coronavirus Disease.

CoP - Communities of Practice

DBMS - Database Management System.

HIL – Higher Institution of Learning.

ICT – Information and Communication Technology.

IHL – Institution of Higher Learning.

KM – Knowledge Management.

Abstract

Knowledge management has become a key factor for the success of all organizations. Information and communication technology (ICT) remains the only technology that facilitates information and knowledge sharing in any organization. Therefore, its use is prominent in any form of knowledge management initiative. The value of knowledge management is more when made available to the right people at the right time. Thus, knowledge sharing is facilitated through information and communication technology including computers, telephones, e-mail, databases, data mining systems, search engines, video conference and many more. The chapter investigates the practice of knowledge capture, sharing, storage and utilization among the academic and non-academic staff of Northwest University, Kano. Two hundred (200) staff were selected as a sample using a simple random sampling technique. A questionnaire was used for the data collection. SSPS version 20.0 was used to generate frequencies, percentages and mean scores. The findings revealed that there wasn't any form of standard in knowledge management practice among the staff, however majority have been and are still willing to share knowledge. It was also discovered that there wasn't much commitment by the University management towards enhancing knowledge management practice. The study highlighted lack of management intervention and lack of sophisticated and up-to-date information and communication facilities as major challenges to the practice of knowledge management in the institution. It concludes by highlighting the acceptability of knowledge management practice among the staff of the University. It was also recommended that the application and use of information and communication technology to support knowledge management practice requires a new conceptual approach. The University management should also be more committed to the issue of knowledge management practice.

Keywords: Knowledge Management, Knowledge Sharing, Information and Communication Technology.

1.1 Introduction

Knowledge management, being a new concept, has attracted the attention of many scholars who try to define it for clear understanding and possible adaptation, among which Tadesse (2019) defined Knowledge management as a collaborative and integrated approach to identifying, acquiring, distributing and maintaining knowledge that is essential to the organization. Thus, it involves the practice and administration of knowledge within an organization for best performance and effective outcome, the knowledge to manage includes tacit, explicit and subjective for the benefit of the organization. Knowledge management is also a process used to improve the performance of individuals and organizations by generating value from the organizational intellectual and knowledge assets (Tadesse, 2019).

Similarly, Zinzou and Doctor (2020) presumed that KM is the effective use of information and knowledge within an organization; which include creating, sharing, using and managing the information and knowledge of the organization. Structural best performance is dependent on how effective the employees and the employers utilize the knowledge available and how committed they are towards achieving the organizational goals. Thus KM can be seen as a multidisciplinary approach to achieving organizational objectives by making the best use of knowledge (Zinzou and Doctor, 2020).

Knowledge management is a set of relatively new organizational activities that are aimed at improving knowledge, knowledge-related practices, organizational behaviors, decisions and organizational performance. KM focuses on knowledge processes, knowledge creation, acquisition, refinement, storage, transfer, sharing, and utilization. Based on the discussion so far, one may conclude that KM is a discipline that promotes an integrated approach to identifying, managing and sharing of all organizational information assets such as database documents, policies, procedures, unarticulated expertise, and experience of individual workers (Zinzou and Doctor, 2020). KM refers to understanding organizational information flows and implementing learning practices which make explicit key aspects of its knowledge base.

Recently, KM has received increased attention from academics and knowledge practitioners through the creation and diffusion of knowledge. This has become an even more important factor in competitiveness; due to the need to disclose the intellectual power available in institutions of higher learning (IHL) (Zinzou and Doctor, 2020). Therefore, the practice of knowledge management in academic environment should be facilitated towards the target mission and vision of the institution. Teaching, learning, and research studies should be built on ample provision of relevant information at the right time. KM practice should be propagated and appropriately implemented for growth and development. Ohiorenoye (2014) noted that Some universities may not have embraced and integrate knowledge sharing into their corporate culture, as such there is a need to encourage and motivate such institutions to practice knowledge sharing, storage and utilization. Furthermore, KM in higher institutions of learning could help in reviving, revisiting, and effecting stronger curriculum development process, interdepartmental assessment, department portfolios and program review. Thus, everyone should be willing to inform and be

informed all the time (Zinzou and Doctor, 2020). They also maintained that KM was traditionally and historically managed implicitly, however, effective and active knowledge management requires new perspectives and technologies on all facets of organizations. Information and communication technology (ICT) facilitates knowledge capture, storage, sharing, and utilization. Thus, knowledge sharing is simplified through information communication technology; such as computers, telephones, e-mail, databases, and data mining systems, search engines, video conferencing equipment and many more (Hamad, 2018). Similarly, Chang and Lin, (2015) as cited in Hamad (2018) maintained that ICT empowers information and knowledge to be electronically, captured, stored, accessed, delivered and retrieved for organizational decision-making. Thus, ICT play a vital role in simplifying, enhancing and signifying knowledge management process. It is in relation to this background the researchers examined the role of ICT in knowledge management practice in Nigerian Universities; particularly, the Northwest University, Kano.

1.2 Problem statement

The integration of Information and Communication Technology (ICT) is imperative in knowledge management practice of any organization. The advent of knowledge management has taken quite some time, to the extent that its relevance cannot be overlooked. However, there are so many situations that prevent the full acceptance and implementation of knowledge management practice and the use of ICT in higher institutions of Nigeria. In addition, there is a paucity of literature on this issue in Nigeria and specifically the Northwestern region. This motivated the researchers to explore the situation in Northwest University, Kano, Nigeria. There is a need to investigate on the implementation of ITC in KM practice for development of the University; that is, to uncover the current KM practice within the institution which includes collaboration, identifying people with special capabilities and sharing knowledge for possible documentation.

1.3 Significance of the study

It is hope that the study will address the ineffectiveness of KM practice in higher institutions of learning in Nigeria. It is also expected to uncover the traces of KM practice and provide means on how to strengthen such practices in more acceptable and beneficial manner. The study will also facilitate the provision of appropriate ICT facilities that are required for the effective implementation of KM practice. The study will also draw the attention of the University management to give full support for effective knowledge management practice.

1.3 Research objectives

The general objective of the study is to find out a means through which Knowledge management practice will be enhanced, appreciated and implemented in higher institutions of Nigeria.

1.4 Research questions

1. What types of ICT are available to share information and knowledge in the University?
2. What are the management incentives and provision to enhance knowledge sharing?
3. To what extent is the need for knowledge sharing among the staff of the University?
4. What is the level of willingness of the staff to contribute to knowledge sharing for collective use?
5. What are the challenges encountered in knowledge sharing among the University staff?

2.0 Review of Related Literature

Knowledge management has become the key factor for the success of all organizations. ICT facilitates information and knowledge sharing, so they have a prominent role in Knowledge management initiatives. The implementations of knowledge management projects have become easier, thanks to technological tools that are now acceptable by almost all. The value of Knowledge management is more when it makes information available to the right people at the right time. According to Singh (2022) the computer technology is capable of assisting knowledge seekers and experts engaged in different types of knowledge acquisition process through formal and informal activities, such technology includes; the combination of computers, databases, and telecommunications, especially the Internet. The ICT also provides managers with an incredible number of options for improving the way organizations function. Hence, adopting it, offers users a considerable benefits that include:

- Reduced service costs.
- Save the time of users as well as staff.
- Quality and quantity improvement.
- Improved user services.
- Improved customer/user satisfaction through a more professional approach to service delivery.
- Improved productivity.
- Information Technology helps to maximize the benefits.
- Provides confidence to managed and cover risk to achieve the organizational goal.
- Faster and easier recovery of data and disseminate the information.
- Reducing risks and errors.

The application and use of ICT to support KM is currently an emerging task and requires a new conceptual approach and research agenda to address the new challenges. ICT uses in KM provide us with the potential to greatly enhance access to knowledge, as information can be easily acquired, stored and disseminated; the overall functionality of the organization is improved (Singh, 2022).

ICT enables and provides tools that support KM processes within an organization (Singh, 2022). To succeed in KM, it is important that assessment of ICT capabilities is done properly, to supports and facilitates KM processes such as knowledge capture, storage, retrieval, sharing and

collaboration in institution of higher learning (IHL). In this paper, several KM enabling ICT tools and networks were identified to be relevant for developing the proposed framework due to their significance in carrying out KM roles. These include Knowledge Portals, Electronic Document Management Systems, Academic Publishing, Academic Contents and Exchanges, Database Management Systems (DBMS), Data Warehouse, Data Mining, Groupware, Communities of Practices (CoP), Social Communities of Interests, and Individual Communities of Interests (Singh, 2022).

The use of ICT in KM according to (Tsal & Ching-liang and Chen, 2006) can readily be implemented by connecting Internet, learning previous processed information, to provide unlimited sharing. They further highlighted that processed information is the essence of knowledge, and must be put into effective management. Similarly, ICT plays an important role in supporting and implementing KM, as there is a significant relationship between KM and ICT, thus for any organization to move forward, it has to employ technology for excellent performance.

Successful knowledge management creates techniques, technologies, and rewards for getting employees to share what they know and make better use of accumulated workplace knowledge.

Singh (2022) maintained that effective and efficient sharing of knowledge can give an organization competitive advantage. Singh also highlighted the benefits of knowledge management to include;

- Faster decision-making.
- Efficient access to knowledge and information.
- Increased collaboration and idea generation
- Enhance communication throughout the organization
- Improved quality of information and data.
- Increase security for intellectual progress.
- Optimized training of staff.

The key components of ICT tools and applications are effective in managing and handling information and knowledge thereby maintaining the knowledge, base organization. According to Singh (2022) the following technology can greatly contribute to organization's knowledge management environment:

- Intranets/Extranets
- Electronic Document Management
- Data Analysis Data Warehousing
- Help Desk Technologies
- Mapping Tools
- Machine learning
- Workflow management systems
- Groupware

- Information Retrieval Tools
- Data Warehousing: Metadata
- Portals
- Agent Technologies
- Ontology's (Computer based)

This approach allows many people to search for and retrieve codified knowledge without having to contact the person who originally developed it. This therefore allows for knowledge to be accessed and used easily by anyone in the organization; however, Pierrey (2010) maintains that human portal; that is individual connectivity, is one of the KM solutions.

The people-to-people approach, on the other hand, is centered on the dialogue between individuals, not the knowledge objects in a database. In this approach, knowledge is closely tied to the person who developed it and should be shared mutually, mainly through direct person-to-person contact. The main purpose of ICT in this approach is mainly to aid in the communication of knowledge, and not necessarily to store it.

University has a massive role to play in the current world of knowledge economy, and thus it should not exist isolated. It should be involved in sharing information and knowledge in the academic environment through teaching, learning, and research process. KM is fundamental in higher institutions of learning (HIL) as they focus more on effective creation and use of knowledge to accomplish their goals (Funda, 2019). This is usually achieved through the use of the University Library which serves as institutions that capture and share tacit and explicit knowledge as a practical means to improve service delivery in the current knowledge base economy; thus libraries should constantly improve their knowledge management practice to suit the current library environment (Funda, 2019).

The dynamic nature of the current world requires institutions of higher learning to speedily create knowledge and apply it appropriately. Chang (2009) as cited in Funda, 2019) asserts that knowledge sharing is a natural activity among academic institutions, whereby the amount of knowledge generated through conferences, publications and seminars is distantly greater than any other industry, thus HIL are required to manage, balance and share knowledge and information with the students and the faculty members.

Empirical review on the role of ICT in knowledge management practice revealed that a study by Funda (2019) which employed the use of exploratory qualitative and quantitative research design, found that the utilization of ICT in KM was crucial in organizational decision-making. The respondents as ICT users had varied level of competency; majority were competent with ICT skills, this was followed by those with high skill, then beginners and the professionals. This therefore indicated that the professionals were not many and, thus the institution had to do more to elevate the ICT skills of its staff. It was also revealed that a variety of software packages were used across different departments in the University which include MS Word, Excel, Postel, requisition and e-Learning system, management information system, mark application system, equaling and library system.

Another study by Zinzou and Doctor (2020) reveal that the staffs were not fully aware of KM in their workplace, however majority new about it and viewed it as essential and strategic part of the institution, and they consider it as knowledge base. There were also mixed reactions related to the level of KM practice in the institution as; some believed that it was still in the introductory and intermediate stage, while others believed that it was at the growing phase. They also rated the KM practice as adequate, good and excellent. They also affirmed that there was knowledge creation, storage, sharing, and transfer using various methods, including ICT;however, they prefer the use of communities of practice in sharing knowledge as they least prefers use of technology.

A study by Charles and Nawe (2017) revealed that the respondents were not fully aware of KM practice, similarly, Ogunbanwo, Okesola & Buckley (2019) revealed that majority of the respondents were aware of KM in Nigerian Higher Institutions of Learning however there is significant difference in the awareness level between public and private institution so also between students and staff. It was also revealed that the awareness was high, the practice was low, the acquisition, storage, and sharing was rare. The challenges were; inadequate funding, lack of adequate and up-to-date data, lack of time to understand KM, lack of successful KM model, lack of effective communication, lack of cooperation, difficulty in capturing knowledge and unwillingness of staff to share knowledge.

Zuru (2015) also maintained that Nigerian Universities and HIL only invested averagely in information and communication technology. Similarly, academic environment is a place where the application and management of knowledge is suitable, because of the availability modern information infrastructure (ICT), these facilities may, promotes knowledge sharing among lecturers and students.

In essence, KM can contribute to public sector including HIL by increasing efficiency, implementing innovative management practice and improving services to citizens to expand their quality of life and wellbeing. It also helps to face new challenges and improve the quality of public process, products and services for the citizens and the society in general (Urpla, Sartori and Machado, 2020).

3.0 Methodology

The study adopted a descriptive survey research design using a simple random sampling technique; data were collected using a questionnaire developed for this study. Two hundred questionnaires were distributed to the staff of the University, both academic and non-academic which cut across all the faculties and units of operation. One hundred and, seventy170 (85%) questionnaires were returned and found useful for the study. The data collected was presented in a tabular form and analyzed with the use of frequencies, percentages, and mean average scores.

4.0 Findings of the study

4.1 ICT Available for Knowledge Sharing

The Respondents were asked to indicate the type of ICT available for knowledge sharing.

Table 4.1 ICT available for knowledge sharing

S/N	Categories of ICT	S/A	A	MA
1	Computers	-	54(31.8)	116(68.2)
2	Telephones	28(16.5)	97(57.1)	36(21.2)
3	E-Mail	-	67(39.9)	103(60.3)
4	Database	28(16.5)	39(22.9)	101(59.4)
5	Data Mining	116(68.2)	32(18.8)	-
6	Search Engines	14(8.2)	62(36.5)	94(55.3)
7	Video conference	157(92.4)	4(2.4)	9(5.3)

SA= strongly agree, A= agree, MA= moderately agree.

Table1 reveals that almost all the ICT tools presented to the respondents indicated were much available to the staff, except for data mining which was scarcely available with 116(68.2%) and video conferencing at 157(92.4%).

The finding may not be unconnected with the fact that video conference is very much accepted in the Nigerian community, its popularity was even more during the COVID-19 period when there was lockdown throughout the country, hence the only mode of sharing information was video conference, for e-mail, telephone, and search engines, many people are very competent with them, and they serve as the most common methods of sharing knowledge and information.

4.2 Management Incentive and Provision

Respondents were further asked to indicate the management provision of incentive towards enhancing knowledge management practices.

Table 4.2 Management incentive provision

Response		Frequency	Percentage	Valid Percentage	Cumulative percentage
	Yes	90	52.9	52.9	52.9
Valid	No	80	47.1	47.1	100.0
	Total	170	100.0	100.0	

Table 2 showed no standard provisions of incentive as both responses were almost the same. Those on the positive side were 90(52.9%) as well 80 (47.1%) responded negatively. This therefore implies that the University management should find ways of motivating the staff to share knowledge and information with passion.

Respondents were further asked to rate the level of knowledge sharing among the staff of the University.

Table 4.3: Rate of knowledge sharing

Response		Frequency	Percentage	Valid Percentage	Cumulative percentage
	Excellent	18	10.6	10.6	10.6
	Good	55	32.4	32.4	42.9
Valid	Satisfactory	42	24.7	24.7	67.6
	NA	55	32.4	32.4	100.0
	Total	170	100.0	100.0	

NA: Not available

The table showed that there is a form of knowledge sharing among the staff; however the responses indicated equal level of appreciation at good with 55(32.4%) as well not available responses at 55(32.4%). This indicates a sign of faulty management; however, there is strong evidence that KM practice is not available in some parts of the University. As such, there is a need for the faculty members to be more serious with KM process and practice for effective service delivery.

The respondents were equally asked to clearly categorize the form of incentives offered to encourage knowledge sharing.

Table 4.4: Categories of incentives

S/N	Categories of incentives	S/A	A	NA
1	Monetary	-	14(8.2)	156(91.8)
2	Recognition	12(7.1)	23(13.5)	135(79.4)
3	Prize and Award	11(6.5)	11(6.5)	139(81.8)
4	Promotion	27(15.9)	14(8.2)	98(57.6)
5	Sponsorship	27(15.9)	14(8.2)	111(65.3)

SA: strongly agree, A: agree, NA: not agree

The table revealed that the incentive offered to the staff to encourage knowledge sharing was not even available as the majority of the respondents indicated that monetary incentive, recognition, prize and award, promotion and sponsorship were not offered. This development showed a serious lack of commitment of the management to KM practice. Thus, the management needs to pay more attention to the implementation of KM exercise.

The respondents were further asked to indicate their sources for instructional learning in carrying out institutional tasks.

Table 4.5: Sources of information

Response		Frequency	Percentage	Valid Percentage	Cumulative percentage
	Colleagues in the University	37	21.8	21.8	21.8
Valid	Official records of the University	40	23.5	23.5	45.3
	University library	70	41.2	41.2	86.5
	Others	14	8.2	8.2	94.7
	NA	9	5.3	5.3	100.0
	Total	170	100.0	100.0	

The finding from table 5 indicated that the University Library was the major source of information provision with 70(41.2%) which was followed by official records 40(23.5%) and colleagues 37 (21.8%). This implies that the University Library serves as an institution that captures, and share knowledge with the staff of the University, thus serves as a knowledge repository as a practical means of improving KM practice.

Respondents were asked if they have ever encountered any form of information denial.

Table 4.6: Denial of access to information

Response		Frequency	Percentage	Valid Percentage	Cumulative percentage
	Yes	13	7.6	7.6	7.6
Valid	No	157	92.4	92.4	100.0
	Total	170	100.0	100.0	

The finding indicates willingness to share information among the staff, as the table indicates few positive responses of 13(7.6%) on denial of access to information. This therefore implied that KM practice in the institution had reached a certain level; however, there is need for improvement for the management and the staff.

4.3 Need for Management Intervention for Efficiency in KM

Respondents were asked to indicate the need for management commitment to KM practices.

Table 4.7: Need for management intervention for efficiency in KM

Response		Frequency	Percentage	Valid Percentage	Cumulative percentage
	Yes	128	75.3	75.3	75.3
Valid	No	42	24.7	24.7	100.0
	Total	170	100.0	100.0	

The findings indicate high positive response with 128(75.3%) response; it was clear from the previous responses on this paper that there is need for the University management to intervene for effective and efficient KM practice in the University.

4.4 Willingness of the Staff to Contribute to Knowledge Sharing

Respondents were asked to indicate their willingness to contribute knowledge sharing information for collective use.

Table 4.8: Willingness to contribute to knowledge sharing

Response		Frequency	Percentage	Valid Percentage	Cumulative percentage
	Without reservation	68	40.0	40.0	40.0
Valid	Moderately	92	54.1	54.1	94.1
	NA	10	5.9	5.9	100.0
	Total	170	100.0	100.0	

The findings indicated that 92(54.1) respondents were moderately willing to contribute and 68(40%) were willing without any reservation. These shows total submission towards the need for KM practice. This implied that over the time, the staff of the University have developed a positive attitude towards KM practice.

4.5 **Challenges Encountered in Knowledge Sharing**

Respondents were required to provide any challenges encountered in KM

Table 4.9: Challenges to Knowledge Sharing

Response		Frequency	Percentage	Valid Percentage	Cumulative percentage
	Awareness	99	58.2	58.2	58.2
	Lack of management intervention	32	18.8	18.8	77.1
Valid	Lack of cooperation among staff	11	6.5	6.5	83.5
	Lack of ICT facilities	24	14.1	14.1	97.6
	NA	4	2.4	2.4	100.0
	Total	170	100.0	100.0	

Table 4.9 showed that lack of Awareness is the major reason for poor KM practice with 99(58.2%) positive responses, followed by lack of management intervention 34(18.8%) and lastly ICT facilities 24(14.1%). The major problem with KM practice in our environment and HIL in Nigeria is lack of awareness, management intervention and ICT facilities. The management in the HIL in Nigeria should be more committed and encourage staff to engage in active knowledge sharing for effective service delivery.

4. 6 Discussion of Findings

The findings indicated that there is the availability of ICT tools among staff of the University. These facilities can be used to share knowledge, even though some of them were scarcely available. This finding has collaborates with that of Zuru (2015) which maintained that Nigerian Universities and HIL only invested averagely in information and communication technology. It could also be said that the provision of highly sophisticated hardware is limited, which is very vital toward the global KM practices. This also collaborates Funda (2019) which revealed that a variety of software packages were used across different departments in the University which include MS Word, Excel, Postel, requisition and e-Learning system, management information system, mark application system, equaling and library system.

It was also discovered that there was lack of commitment of the management towards KM practice. Thus they should be guided by the words of Funda (2019) which stated that University has an enormous role to play in the existing world of knowledge economy, hence should be involved in sharing information and knowledge to the academic environment through teaching, learning, and research process.

Lack of awareness was the major cause for poor KM practice in the University under study, then lack of management intervention, then lack of ICT facilities. The finding was in line with the study of Afolakemi, Julius and Sharlyn (2019) revealed that the respondents had challenges in regard to KM practice such as; inadequate funding, lack of adequate and up-to-date data, lack of time to understand KM, lack of successful KM model, lack of effective communication, lack of cooperation, difficulty in capturing knowledge and unwillingness of staff to share knowledge.

Also another finding indicated that majority of the staff, were moderately willing to contribute to KM practice, while almost half were willing without any reservation. These shows total submission towards the need for KM practice. This rhyme with the findings of Zinzau and Doctor (2020) which revealed that the staff were not fully aware of KM, however majority new about it and viewed it as an essential and strategic part of the institution, and they consider it as a knowledge base. In relation to what has been discussed so far, it can be concluded that the provision of standard form of KM practice needs to be redefined in academic institutions in Nigeria.

4.7 Conclusions

KM practices are good initiatives that should be maintained for the growth of knowledge, for individuals, organizations and the societal development. The use and adoption of ICT to support KM is an emerging act that requires a concrete approach and solid agenda to deal with the new challenges. ICT uses in KM enhance access to knowledge as data and information can be easily acquired, stored and shared or disseminated. Therefore, the practice of knowledge sharing and management in Nigeria is absolute.

4.8 Recommendations

1. The University management should be actively involved in KM practice by giving incentives to the staff as a method of encouraging and motivating them to engage in knowledge sharing practice for the institution.

2. The management should also make available KM infrastructure to ensure effective KM practice in the institution.

3. There is need for more training and retraining of staff on the awareness and importance of KM practice.

4. For knowledge to be treated as an intellectual asset, in the University, the management should put in place all the necessary structures to support knowledge management.

5. The faculty members should be more serious with KM process and practice for effective KM practice.

6. The University library should put in place all the necessary ICT facilities for effective knowledge capture, acquisition, storage, and sharing.

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