Knowledge Repositories for Managing Knowledge in Learning Organizations

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Abstract: Learning organizations create a phenomenal amount of scholarly knowledge as part of their academic discourse and research activities. This scholarly knowledge must be preserved and made accessible to other members. The absence of tools and strategies to facilitate the storage and accessibility of knowledge and information resources poses lots of challenges for the growth of learning organizations, particularly, learning organizations in Ghana. This study, therefore, sought to assess the deployment of knowledge repositories in learning organizations toward effective knowledge creation, use, sharing, retention, and retrieval. The study employed the triangulation design and online survey research. The triangulation helped in the collection of quantitative data followed by qualitative instruments (interviews) to find answers to pertinent questions and issues that were insufficiently addressed in the questionnaire responses. Nine (9) learning organizations in Ghana participated in this study. The study established that knowledge repositories and technology played critical roles in managing knowledge in learning organizations. However, the knowledge repositories were not user-friendly and fully utilized or accessible for knowledge management practices at the learning organizations. Also, the absence of fully integrated ICT Tools and Infrastructure inhibited the effective promotion of knowledge management initiatives at the learning organizations. The study concludes by developing a knowledge repository architecture for knowledge management in learning organizations.

Keywords: Knowledge, Knowledge management, Knowledge repository, Organisational Learning, Learning organizations, Knowledge management technology

1. Introduction

One aspect of knowledge management (KM) is the implementation of a central repository or system to manage the local contents and memories of the organization (Alstete and Meyer, 2020), rather than leaving it to chance (Frost, 2015). Critical and relevant enterprise and proprietary knowledge, as well as memories of organizations, must be stored in a location, systems, and repositories, and in a format that can be easily accessed by users (Dei, 2017). Repositories are implemented in organizations to enable them to capture data, information, and knowledge (Dingsøyr, 2019; Frost 2018) or its intellectual assets, in any form and to improve at all levels or departments (Frost, 2015).

Knowledge repositories (KRs) serve as key systems used to manage the knowledge assets, organizational memories, and scholarly knowledge of members of organizations. KRs connect members of their communities locally and globally via databases. KRs provide a central location to collect, create, share, and retain knowledge assets and learning resources for use in instructional design and content development for both traditional and non-traditional learning environments and learning organizations (LO). KRs have become an integral part of LOs knowledge management (KM) activities and a valuable stimulant of teaching, research, and learning (Dei and van der Walt 2020; Dei, 2017).

KRs have become important in scholarly communication, institutional visibility, university ranking, and the feasible foundation of institutional KM (Kakai, 2018). LOs create a phenomenal amount of scholarly knowledge as part of their academic discourse and research activities. The knowledge created is published through various vehicles of scholarly communication such as journals, conference and symposium proceedings, books, case materials, patents, etc. LOs also produce a great deal of knowledge in the form of ephemeral and unpublished materials such as working papers, technical reports, courseware, classroom presentations, lecture notes, etc. Similarly, KRs consist of all electronic publications such as thesis, journals, books, and conference papers (Nunda and Elia, 2019; Adeyemo and Jamogha, 2021).

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In LOs, KRs are used for scholarly communication; storing learning materials and courseware; electronic publishing; managing collections of research documents; preserving digital materials for the long term; adding to the institutions' prestige by showcasing its academic research; knowledge management; research assessment; and encouraging open access to scholarly research. Furthermore, KRs in LOs provide services to faculties, researchers, and administrators who want to archive research findings, reports, books, publications, and creative materials, among others, in any form. According to Dei and van der Walt (2018), it has always been a practice, in LOs, to store all relevant documents contributed by in-house resources in the knowledge repository or database. The implemented systems in LOs allow staff to deposit the content and explicit knowledge. Depositing and storing knowledge in repositories is expected from the staff of LOs and allows them to utilize the knowledge generated within the community.

This, therefore, means that LOs in Ghana need to invest and deploy tools and strategies to facilitate the deployment of KR toward the management of knowledge and information resources. Thus, the availability of KRs in LOS in Ghana should be able to enable them (LOs) to effectively embark on scholarly communication, records management, and manage their contents (theses, conference materials, journals, books, etc.).

There have been several studies on institutional repositories (Fadel and Durcikova, 2014; de Brito et al., 2016) and knowledge repositories (Gray and Durcikova, 2006; Semertzaki, 2011; Sugumaran, 2016). However, there is a lack of empirical research that seeks to investigate the role of KRs in managing knowledge in LOs, specifically, within the Ghanaian context. The absence of empirical literature has resulted in the absence of KR tools and strategies for the management of knowledge in the LOs despite the roles of the LOs in creating and generating knowledge. It is against this background that this study seeks to assess the deployment of KRs and the roles KRs play in LOs toward effective knowledge creation, use, sharing, retention, and retrieval.

2. Literature Review

2.1 Learning Organisation

Organizations consist of individuals or groups of individuals working towards a common goal or culture (Felipe, Roldán, and Leal-Rodríguez, 2017). Consequently, it takes time to foster a new culture among the members of organizations (Chen et al., 2018; Felipe, Roldán and Leal-Rodríguez, 2017) such as LOs (Šedžiuvienė, 2017). LOs for that matter organizational learning is a concept (or phenomenon) that is not easily defined. Questions such as “are there any true learning organizations?” and “are there any organizations that are not learning?” (Örtenblad, 2018). Örtenblad (2007) further posits that the phrase "learning organization" emerged from two distinct developmental processes: organized learning and organizational learning. Organized learning refers to the structuring of certain learning activities, particularly in the fields of pedagogy and educational science (Hofstetter, 1967), as well as management and organization studies (Huczynski and Boddy, 1979; Örtenblad, 2018; Örtenblad, 2007). Organizational learning was transformed into the term "learning organization" as part of the other evolving process for the term (Dery, 1982; Örtenblad, 2018; Örtenblad, 2007).

Senge (1990) went ahead to define LOs as “organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.” Garvin (1993) also posit that LOs are “organizations skilled at creating, acquiring and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights”. In the opinion of Pedler and Burgoyne (2017) and Pedler, Burgoyne, and Boydell (1997), LOs are organizations that facilitate the learning of all their members and continuously transform themselves in order to meet their strategic goals. Continuous learning with transformation as the goal is a recurrent, stated promise in the definition. There is also an implicit promise that organizations will learn to adapt to their surroundings (Doyle and Johnson, 2019; Jensen, 2005; Song et al., 2013). In this regard, *Neelen (2017) posits that* LOs are good at individual learning (IL) and organizational learning (OL). Individual learning focuses on increasing knowledge and skills to do a better job (Odor, 2018) while organizational learning is about ‘solving problems on the organization’s behalf (which doesn’t necessarily lead to learning, so perhaps we should call it ‘organizational problem-solving instead) (Voolaid and Ehrlich, 2019; Alles, Seidel, and Gröschner, 2019) and ensures that individual learning is enriched and enhanced in organizations (Odor, 2018).

In LOs, the group of people works together collectively to enhance their capacities to create results they care about (Odor, 2018) and enhance learning (Šedžiuvienė, 2017). The process of learning must ultimately be made part of the culture, not just be a solution to a given problem (Šedžiuvienė, 2017). LOs have a culture that supports learning and innovations both by individuals and by the organization itself (Tan, 2019). LOs depend on the

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cognitive process of the individual in the organization (Antunes and Pinheiro, 2020). The environment promotes a culture of learning, a community of learners (Voolaid and Ehrlich, 2019; Alles, Seidel, and Gröschner, 2019), and it ensures that individual learning enriches and enhances the organization as a whole (Odor, 2018).

The concept of LO regards the organization as an entity and focuses on the characteristics that encourage its members may learn. LOs are places where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole (reality) together." (Senge, 2017; 1990). LOs encourage ingenuity, independent thinking, and teamwork building and encourage and facilitate learning to continually transform itself not just to survive but also to excel in a swiftly changing business environment (Salleh and Huang, 2011).

In LOs, work processes must integrate attention to every aspect of knowledge. The processes and culture must enable knowledge creation, processing, storage, and dissemination (Antunes and Pinheiro, 2020). Organizational knowledge is knowledge independent of specific members in the organization, e.g. knowledge in knowledge repositories, and knowledge embedded in policies, and routines (Antunes and Pinheiro, 2020; Serrat, 2017). Members in LOs share ideas and both are concerned with processes for acquiring information, interpreting data, developing knowledge, and sustaining learning (Antunes and Pinheiro, 2020; Park and Kim, 2018). LOs also create opportunities for their member to share their ideas and insights without fear of being judged, expand their knowledge, and work together to achieve common goals (Su, 2017).

According to Senge (2017) and Goh (2020), the core of LOs work is based upon five “learning disciplines”, each providing a true dimension in building an organization that can truly learn: Senge´s five disciplines are integral components in LOs, providing tools and methods that are applicable and useful in the process of learning. The 5 disciplines are

1. System’s thinking (collaborative learning culture): every LOs is supported by a culture of learning and every individual in the LOs plays a vital role in the learning and KM process.
2. Personal mastery (lifelong learning mindset): LOs require a forward-thinking mindset. Members must develop lifelong learning and KM practice where they value and understand the importance of continual growth.
3. Mental models (room for innovation): the members must be able to evaluate and assess their cognitive standing in the way of progress.
4. Team learning (knowledge sharing): collaboration is key in LOs. Every member must be aware of the objectives and outcome of the LOs and work towards it/them.
5. Shared vision (forward-thinking leadership): finally, LOs must look for forward-thinking leaders with vision, enthusiasm, and dedication to promote KM initiatives.

2.2 Knowledge Management

An effective organizational environment and the implementation of KM processes should increase the quality and quantity of both explicit and tacit knowledge of individuals, teams, and the whole organization (Omotayo, 2015). Davenport (1994) succinctly defined KM as “the process of capturing, distributing, and effectively using knowledge.” Alosaimi (2018) further opines that KM is the systematic management of all activities and processes referred to generation and development, codification and storage, transferring and sharing, and utilization of knowledge for an organization’s competitive edge. KM as a process in this study is seen as any practice or process of acquiring, creating, sharing, capturing, and using knowledge, wherever it resides, to enhance organizations learning and performance (Asiedu, Abah, & Dei, 2022). Its goal is to leverage and improve the organization’s knowledge assets to effectuate better knowledge practices, improved organizational behaviors, better decisions, and improved organizational performance” (Dei and van der Walt, 2020; Dei, 2017).

The ability to create new knowledge is often at the heart of organizations competitive advantage (De-Graft, 2019; Frost, 2014). Knowledge creation is the process of making available and amplifying knowledge produced or generated by individuals or groups as well as crystallizing and connecting it to an organization's database or system (Valmohammadi and Ahmadi, 2015). Knowledge creation expands the reasons and practical ways to support it, which allows consistent creation within an organization (Hajric, 2018). Knowledge creation in this study is seen as the process of developing and obtaining insights, skills, and relationships either from internal sources (tapping into the knowledge of its staff, learning from experiences, and implementing continuous process improvements) or from external sources (best practices and benchmarking information from other organizations and collaborating with other organizations (Dei and van der Walt, 2020; Dei, 2017).

Knowledge created must be retained (Dei, 2017; Anduvare, 2015). The most effective approach to retaining knowledge in LOs is by implementing strategies such as education, training, communities of practice, and professional networks, documenting the processes, and use of advanced technology to capture work processes (Wamundila and Ngulube, 2011; APQC, 2015), mentoring and apprenticeship, greater access to subject matter experts, storytelling and leveraging retirees (Chigada, 2014; Frost, 2014). Other strategies include the support of formal and informal knowledge networks (social areas, social media, meetings, company functions, knowledge fairs, expertise locators, etc.), and changing the organization's culture (Frost, 2014; APQC, 2015). Knowledge retention is thus seen as all the activities, databases, and repositories that capture, preserve, and archive knowledge of organizations (Dei, 2017). Knowledge can exist or be retained in repositories of organizations and these knowledge repositories mainly consist of individuals, culture, transformations (procedures and formalized systems), structures (formal and informal networks), and external activities (Dei and van der Walt, 2020; Dei, 2017).

The operational objective of KM is to ensure that the right knowledge is available to the right person(s), at the right time, to aid the execution of their knowledge activities (Omotayo, 2015; Ramohlale, 2014). The concept of knowledge sharing in this study is viewed as the process through which one unit is affected by the experience of another and is manifested through changes in the knowledge or performance of the recipient units and can be demonstrated by measuring changes in performance and enabling the exploitation and application of existing knowledge for the organization's purposes (Dei and van der Walt, 2020; Dei, 2017)

2.3 Knowledge Repositories

Repositories are systems where information or scholarly works of members of a particular institution are deposited for safekeeping, access, use, and dissemination (Shajitha and KC, 2019). They are information technology-based systems set up to capture, store, index, and redistribute information and knowledge (Moscoso-Zea et al., 2019). Repositories are essentially being used for the acquisition, preservation, and dissemination of locally generated scholarly information. Repositories are increasingly becoming podiums for publishing original and peer-reviewed content in an open-access environment (Saini, 2018).

Repositories are set up to manage the knowledge assets of LOs (Joo, Hofman, and Kim, 2019). KR is thus seen as A database that systematically captures, organizes, and categorizes knowledge-based information about institutions (Mahmoodpour and Lobov, 2019). Knowledge is codified and stored in a repository under the assumption that it will be transferable and useful to others within an organization and the organization as a whole (Ahmed, Salloum, and Shaalan, 2021). KRs serve as key systems used by LOs to manage knowledge assets and organizational memories and to connect members of their communities locally and globally via databases (Nurdin and Yusuf, 2020). KRs provide a central location to collect, create, share, and retain knowledge assets and learning resources for use (Nair and Munusami, 2020) in instructional design and content development for both traditional and non-traditional learning environments of Los (Akella, 2023). KRs have become an integral part of LOs KM activities (Khalil and Khalil, 2020) and a valuable stimulant of teaching, research, and learning (Sahlin-Andersson and Engwall, 2002).

KRs are designed to capture, store, and disseminate relevant knowledge throughout an organization (Singh and Gupta, 2014; Davenport, 2013; Knoco, 2015), and are often used to disseminate best practices among workers (Fadel and Durcikova, 2014). Accordingly, KRs are expected to improve organizational efficiency that is organizations' productivity, flexibility, and innovativeness by enabling organizational members to share, integrate and reuse knowledge more effectively (Bansler and Havn, 2004). Productivity is made possible by using ICT technologies to provide best practices and build a shared knowledge base (Sugumaran, 2016; Semertzaki, 2011; Smith and Brooks (2012). According to Passerini and Wu (2008), ICT empowers experts and professionals in various domains to contribute their knowledge effectively and efficiently. Repositories are enabled by ICT. Good ICT systems (infrastructure, hardware, networks, software) can aid access, production storage, and dissemination of information and knowledge resources considerably more rapidly and powerfully with the help of good ICT infrastructure (Dei and van der Walt, 2018; Ghosh and Ghosh, 2009). Minina and Mabrouk (2019) further posit that ICTs facilitate access to electronic documents, email, network resources, and digitization services to support researchers, academic personnel, and other staff of LOs.

3. Methodology

The triangulation design was applied in this research since it increases the perceived quality of the research, especially when the qualitative study follows the quantitative one and provides validation for the findings (Santos et al., 2020). The quantitative aspect enabled the researchers to gather quantifiable data from the respondents. The qualitative enabled the researchers to gather qualitative or descriptive data from the

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respondents. The respondents were able to express themselves in words and the researchers were also able to gather in-depth insight and understanding of the concepts under study. The purpose of triangulation in this study is to use both qualitative and quantitative data sources and methodologies for the same phenomena in order to maximize the validity and reliability of the findings. Triangulation gave a more thorough knowledge of the study topic or aim and helped offset the drawbacks of employing a single data source or approach.

The researchers made use of survey research since the study involved a geographically dispersed population. The researchers started with the collection of quantitative data using the questionnaire and then used qualitative instruments (interviews) to find answers to pertinent questions and issues that were insufficiently addressed in the responses to the questionnaires. The selected participants were considered, however, as one unit for analysis. The use of the survey strategy in this study enabled the researchers to gather data using the opinions of sampled respondents about the implementation and use of KRs in the LOs.

The selection of cases for this study went through three stages. The first involves the identification and categorization of the LOs. The researchers categorized the LO into nine (9) groups/categories based on individual learning and organizational learning. Nine (9) categories of LOs identified include education and research institutions; law firms; IT firms; health organizations; employment and consulting agencies; finance, banking, and account; construction and engineering firms; hospitality; and energy firms. The second stage involves the selection of organizations or firms from each category of LOs identified in the first stage. The third stage involves the selection of respondents from the selected organizations. From each organization, the researchers purposively selected five (5) respondents who are key stakeholders of knowledge management activities in the organization and same-time management members of the organizations. Therefore, forty-five (45) people served as the respondents for the study.

For this study, the researchers chose an online survey as a principal means of collecting quantitative data from the respondents (Keusch, 2015). According to Usabilitiy.gov (2020), an online survey is a “structured questionnaire that your target audience completes over the internet generally through a filling out a form”. The collected data was stored in a database. The survey tool or application used to produce the online survey provided an automatic analysis of data for the researchers. In addition, the researchers adopted the telephone interview to elicit qualitative data from respondents who were unable to respond to the online survey. The telephone interview followed the structured format of the online survey for conformity.

4. Findings

By the end of the data collection, a total of forty-five sampled respondents, forty-one (41) of them successfully filled out the online survey and responded to the telephone interview. This represents a 91.11% response rate. The presentation of the survey responses was based on the thematic areas of the outlined objectives for the study.

4.1 Understanding KM and LOs

The study first sought to determine the respondents' level of understanding of the concept of KM, KRs, and LOs. Further to this, it sought to find out whether or not the respondents see their organization as an LO. The study established that most of the respondents understand the concepts of KRs as 24 (58.54%) of the respondents gave a positive response that they understand the concept of KRs. Also, 60.98% of the respondents said they understood the concept of KM. This is shown in Figure 1 below.

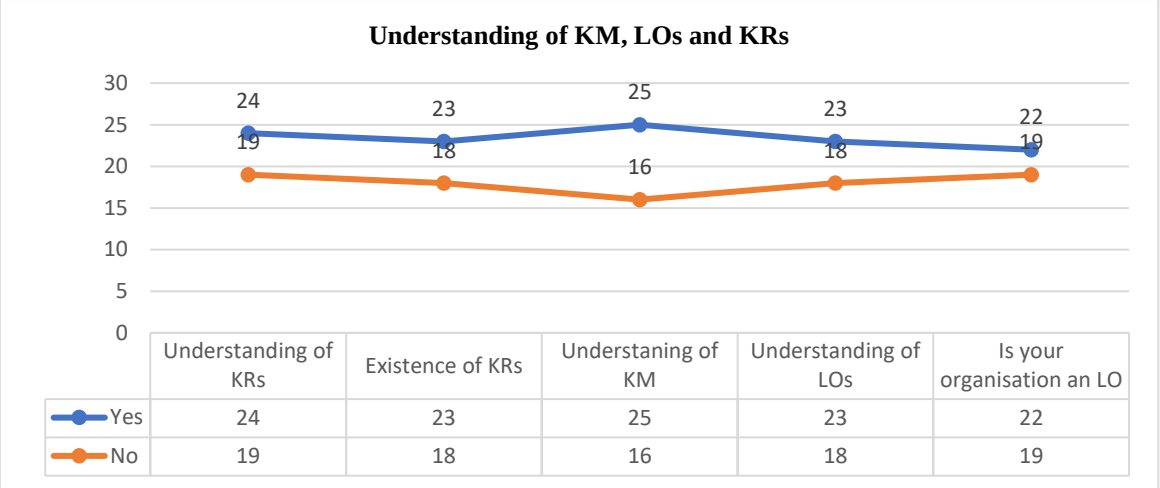

Figure 1: Understanding of KM, LOs, and KRs

Thus, the researchers sought to find out if the LOs have deployed repositories to facilitate the capturing and storage of knowledge assets of the organizations. The study established that 56.10% of the respondents believe there exist KRs in their organizations while 43.90% had contrary views. This shows that the LOs have not fully deployed or implemented repositories as 43.90% are either unaware or do not see their existence at the LOs. This could be a result of their lack of understanding of the concept of KRs as 41.46% said they don't understand the concept of KRs. Some of the respondents outline the following as their definition and understanding of KRs

- KRs are the storage platform for our content.
- KRs are the central place for keeping our knowledge and information products
- Devices for depositing the data and information of the organization
- They are our databases
- The servers that serve as the central location for our data and information.

These responses clearly show that the concept of KRs is not new to the respondents and that they understand KRs. Key to their responses is the acknowledgment of the fact that KRs are systems deployed by their organizations to manage the information and knowledge assets of their organizations.

In relation to understanding the concept of LOs, 56.10% of the respondents understand the concept of LOs while 43.90% of the respondents think otherwise. Similarly, 53.66% of the respondents think their organization can be classified as LOs while 46.34% gave a contrary response to the effect that their organizations cannot be classified as LOs. Some of the respondents outlined the following as their understanding of LOs

- The organization that facilitates the learning of its members and continuously transforms it
- Organizations that learn from its processes.
- LOs are organizations that ensure that the staff are allowed to learn and share knowledge freely
- LOs are organizations that seek to constantly improve themselves and their performance based on their experience and accumulated knowledge
- Organizations that keep learning
- An organization that has developed the capacity to learn, adapt, and change.

Additionally, the respondents indicated that they think their organizations can be classified as LOs because:

- Members of the organization freely share knowledge
- Learning is key to the organization
- Knowledge creation and sharing is fundamental in the organization
- The organization has deployed systems to facilitate continued learning by the members and staff of the organization
- There are learning centers in the organization
- We have an officer in charge of learning
- The organization has made provision for capacity building
- Training and development are part of the organizational culture

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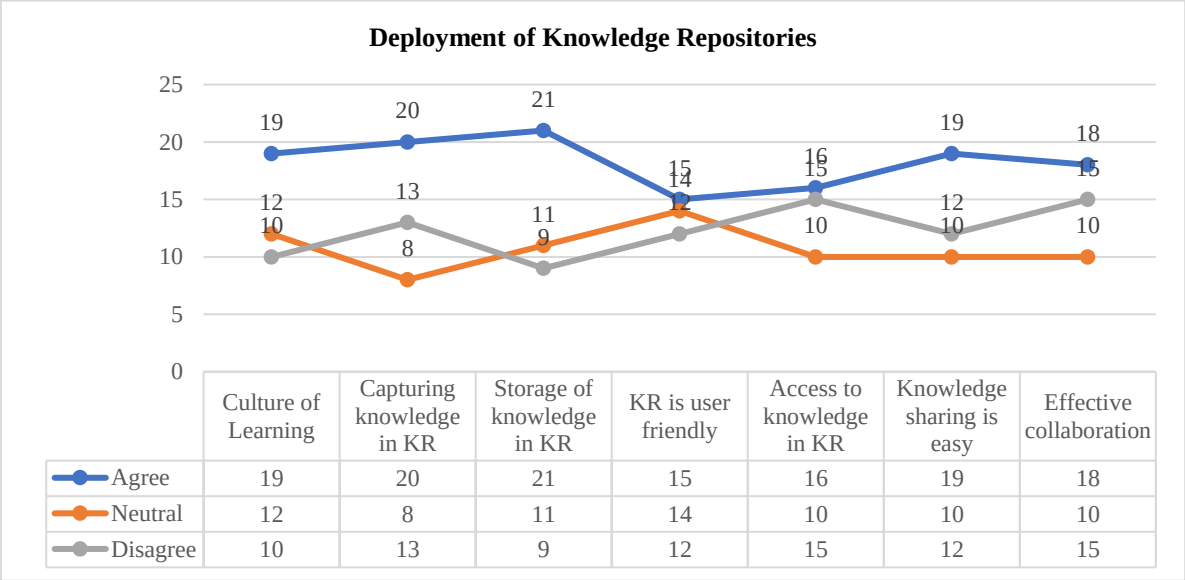
From the responses outlined by the respondents, it can be concluded that they understood the concept of LOs.

4.2 Knowledge Repositories

KRs are designed to capture, store, and disseminate relevant knowledge throughout an organization, and are often used to disseminate best practices among workers. They are expected to improve organizational efficiency. The study assessed KRs deployment from five main perspectives, namely, KRs in support of a culture of learning; capturing of content in the KRs; storage of content in the KRs; user-friendliness of the KRs; easy access and usage of the KRs; KRs supporting effective knowledge sharing; and using the KRs for collaborations. The responses are summarized in Figure 2 below.



	Culture of Learning	Capturing knowledge in KR	Storage of knowledge in KR	KR is user friendly	Access to knowledge in KR	Knowledge sharing is easy	Effective collaboration
Agree	19	20	21	15	16	19	18
Neutral	12	8	11	14	10	10	10
Disagree	10	13	9	12	15	12	15

Figure 2: Deployment of Knowledge Repositories

A culture of learning is a fundamental factor in KM practice. It was established that the culture of learning which is a key component was not present and practiced at the LOs with a rate of 46.34%. A culture of learning promotes the creation and sharing of knowledge, and it is vital because it allows LOs to create new knowledge from shared and existing knowledge.

The creation of repositories is to facilitate the capturing and storage of data, information, and knowledge. The study established that despite the acknowledgment by some of the respondents of the existence of KR, capturing of knowledge in the repositories was not encouraging as only 48.78% of the staff think knowledge is captured in the repositories of the LOs. Again, the study revealed that only 51.22% positively think the knowledge created or captured is stored in the KR of the LOs. The lack of awareness or the non-existence of KRs by 31.72% of the respondents at the LOs could be attributed to why a reasonable 48.78% of the respondents said knowledge created at the LOs was not captured and stored in a KR.

It was again requested that the respondents indicate whether the KRs were user-friendly or not and whether there was easy access to knowledge from the KRs. The responses showed that only 36.59% of the respondents agreed that the KRs are user-friendly while 63.41% (34.15% neutral and 29.27% disagreed) expressed a contrary view indicating either they are unaware or disagreed. Concerning accessing knowledge in the KRs, 39.02% of the respondents agreed that they can access knowledge in the KRs while 60.98% expressed a contrary view indicating that they are unable to access knowledge in the KRs.

When asked if the KRs make knowledge sharing easy at the LOs, it was discovered that only 46.34% of the respondents think the KRs make knowledge sharing at the LOs easy. Conversely, 24.39% of the respondents were neutral and 29.27% disagreed, implying the KRs at the LOs do not support knowledge sharing.

On whether the KRs helped members to be able to collaborate with each other, 18 (43.90%) of the respondents agreed, 10 (24.39%) were neutral and 13 (31.71%) disagreed. These results showed that only a marginal portion believed the KRs provided prospects for collaboration.

4.3 ICT Tools and Infrastructure

The researchers sought to find out the existence of ICT tools and infrastructure at the LOs; whether the ICT tools facilitate easy access to knowledge content; and the availability of tools such as an intranet, portals, groupware, and weblogs for knowledge creation and sharing at the LOs.

Some of the systems and platforms available for knowledge sharing and collaboration at the LOs include the Internet, intranet, email, SMS, WhatsApp, LinkedIn, Facebook, YouTube, ZOOM, teleconferencing, Google Meet, and website. Figure 3 shows that only an average of 48.06% of the respondents affirmed that their LOs have proper ICT infrastructure that can support the KRs and KM processes. The findings suggest the limited availability of infrastructure and deployment of the same to support the KRs and facilitate KM practices at the LOs. On the specific infrastructure, the intranet and portal recorded technological support with a rate of 39.02% for KM practices.

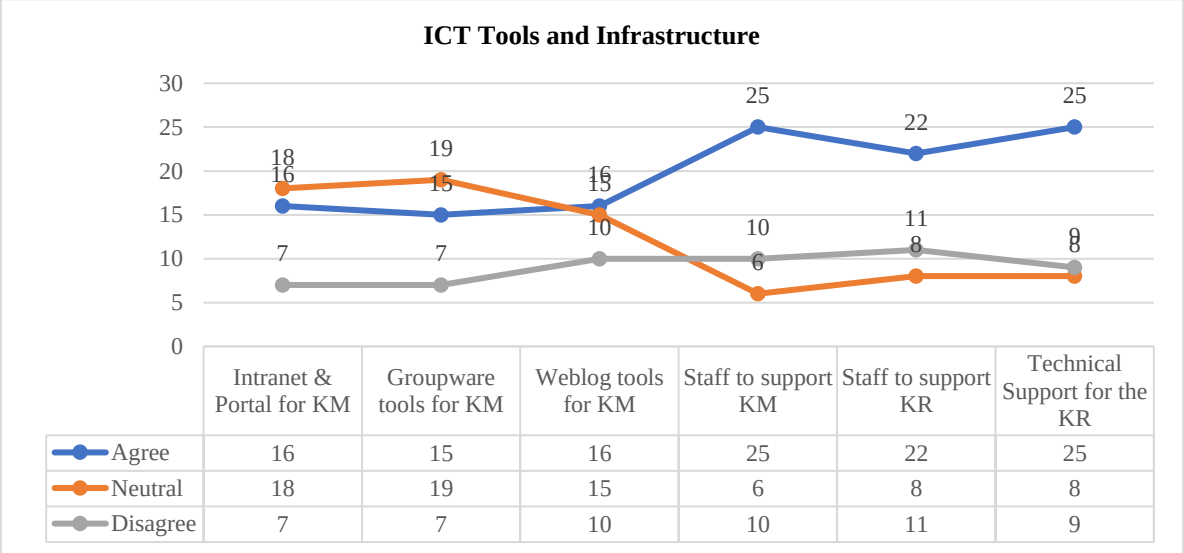


Figure 3: ICT Tools and Infrastructure

Furthermore, the viability of groupware tools in support of knowledge sharing and ultimately KM at the LOs was not encouraging as a minimal positivity rate of 36.59% while 65.41% (46.34% neutral and 17.07% disagreed) of the respondents expressed a contrary view to the existence of groupware tools to support KM. These results showed that the majority of respondents were either unaware or knew that groupware was not used to facilitate KM.

As with groupware, the researchers wanted to establish the viability of weblog tools in support of knowledge sharing and KM. The responses from the field showed that the use of weblogs for managing knowledge in the LOs was not intensely used as only 39.02% of the respondents responded positively while 36.59% and 24.39% of the respondents indicated they were neutral or disagreed. These results showed that the majority of respondents chose to be neutral and disagreed, which could mean that they are not aware of the existence of weblogs or they knew of its existence, but do not know if it is used for KM.

The researchers further wanted to establish the viability of weblogs in support of knowledge sharing and ultimately KM. The results reveal that the majority of staff (60.98%) do not use weblogs for knowledge creation and sharing. This means that the LOs need to promote the use of Weblogs, as it was revealed that only 39.02% of the respondents appreciate the usage of Weblogs in the LOs.

5. Discussion

Firstly, the researchers sought to find out the respondents' level of understanding and appreciation of the concept of LOs and KRs. The study established that most of the respondents understand the concepts of KRs and LOs. This gave a positive sign since the respondents are staff of LOs and LOs consist of a group of people who work collectively to enhance their capacities to create results they care about and enhance learning. Understanding the concept of LOs helps to create an environment that promotes a culture of learning, a

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community of learners (Voolaid and Ehrlich, 2019; Alles, Seidel, and Gröschner, 2019), and ensures that individual learning is enriched and enhanced in organizations (Odor, 2018).

Despite the understanding of KRs, the study revealed that the LOs have not fully deployed or implemented KRs although some of the LOs have deployed KRs. The lack of KRs in some of the LOs could be attributed to a lack of understanding of the concept of KRs as 41.46% said they don't understand the concept of KRs. The creation of repositories with information and knowledge content is key for KM practices in every organization. Key to their responses is the acknowledgment of the fact that KRs are systems deployed by their organizations to manage the information and knowledge assets of their organizations.

A principal attribute of LOs is the culture of learning. It was established that the culture of learning which is a key component was not present and practiced at the LOs with a rate of 46.34%. again, this could be attributed to the lack of understanding of the concept of LOs and KRs by the respondents. This then could lead to a low culture of learning at the LOs although LOs should have an environment that is characterized by a culture of learning. A culture of learning promotes the creation and sharing of knowledge and it is vital because it allows LOs to create new knowledge from shared and existing knowledge.

KRs facilitate the capturing and storage of data, information, and knowledge. The study established that knowledge capturing in the KRs of the LOs was not encouraging as only 48.78% of the staff think knowledge is captured in the repositories of the LOs. This could be attributed to the absence of KRs in most of the LOs. These findings contradict the findings of Dei (2017) and Anduvare (2015) who established that the majority of knowledge in organizations is captured and stored. It is important to bear in mind that a vast amount of knowledge is in the heads of "experts" (Dei, 2017) and these must be captured in the KRs of the LOs. Such knowledge could remain unused if not tapped. KRs are designed to capture, store, and disseminate relevant knowledge throughout an organization, and are often used to disseminate best practices among workers. They are expected to improve organizational efficiency. The LOs should therefore deploy mechanisms to facilitate the capturing, storing, and sharing of knowledge.

The study further revealed that only 51.22% positively think the knowledge created or captured is stored in the KR of the LOs. The lack of awareness or the non-existence of KRs by 31.72% of the respondents at the LOs could be attributed to why a reasonable 48.78% of the respondents said knowledge created at the LOs was not captured and stored in a KR. According to Dei and van der Walt (2018), it has always been a practice, in almost all LOs, to store all relevant documents contributed by in-house resources in the KRs or database. It is therefore important LOs to deploy strategies to facilitate the capturing of knowledge into the KRs. These findings contradict Sugumaran (2016), Semertzaki (2011), and Smith and Brooks (2012) who established that systems and knowledge repositories deployed in organizations are to facilitate the capturing of knowledge created and generated in organizations. Similarly, Dei (2017) found that the deployment of knowledge management systems in learning organizations such as universities facilitated the capturing of both formal and informal knowledge at the universities.

The availability of KRs should facilitate collaboration and easy access to knowledge for every staff member of an organization. The study revealed that the KRs are not user-friendly. Similarly, it was revealed that the KRs are not easily accessible and the knowledge is not easily sharable. The lack of awareness or the non-existence of repositories at the LOs could again be attributed to this result. Frost (2018), Levallet and Chan. (2019), Chhim, Somers, and Chinnam (2017), and Al-Busaidi and Olfman (2017) established that KRs and systems deployed to manage knowledge in organizations should be user-friendly and accessible. The user-friendliness and accessibility lead to the usage and application of the knowledge captured and stored in the KRs. Omotayo (2015) also articulates that creating and sharing knowledge is essential for the survival of almost all organizations.

The study also established that only a marginal portion believed the KRs provided prospects for collaboration. These results could be attributed to a lack of willingness to collaborate at Juriševič Brčić and Mihelič (2015) indicate that willingness significantly influences knowledge sharing, communication, and collaboration. Chigada and Ngulube (2015) also indicate that collaboration, teamwork, and socialization are the surest ways to promote and enhance knowledge sharing in organizations. Collaboration between staff enhances KM and organizational learning, it assumes a basic level of organizational skills such as teamwork (APQC, 2015).

Technology has long been an enabler for KM such as collaborative computing tools, internet, intranet, knowledge servers, groupware, knowledge portals, document and content management systems, knowledge harvesting tools as well as search engines are critical enablers of KM (Singh and Gupta, 2014; Davenport, 2013; Knoco, 2015). The study showed that some of the systems and platforms available for knowledge sharing and

collaboration at the LOs include the Internet, intranet, email, SMS, WhatsApp, LinkedIn, Facebook, YouTube, ZOOM, Google Meet, website, and teleconferencing. However, the findings suggest the limited availability of infrastructure and deployment of the same to support the KRs and facilitate KM practices at the LOs.

Furthermore, the results showed that the majority of respondents were either unaware or knew that groupware was not used to facilitate KM. It is therefore important for groupware to be deployed in the LOs. Groupware fulfills a number of specific roles in relation to KM in organizations. It enables both communication and group memory; facilitates and provides a forum for organizational communication, it collects and stores this communication as well.

The researchers further suggest a framework based on the findings. The framework consists of three (3) main elements. These are ICT Tools/Infrastructure, Knowledge Management, and Knowledge Repositories. The framework established a relationship between the elements and how they interact to generate knowledge as shown in Figure 4 below

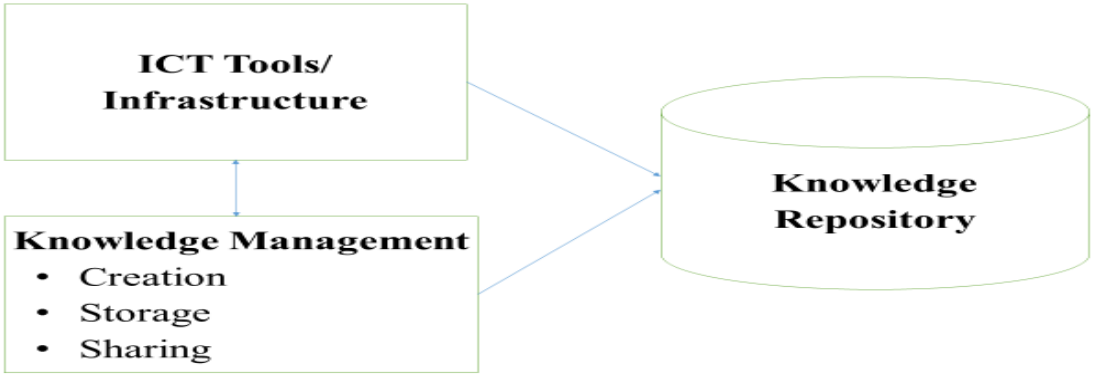

Figure 4: Proposed KR architecture for LOs

The framework suggests three building blocks/elements: KM, KRs, and ICT tools/infrastructure. From this perspective, knowledge is considered as an object that can be created, used, retained, and/or shared among members within or aligned to the LOs and 'is transferable from one place to another with less appropriation. The knowledge can be codified, indexed, and stored in the repository. When knowledge is created, it is either used instantly, shared among members of the LOs, or deposited in the KR for storage, archiving, and indexing, making it possible for others to easily access or retrieve the knowledge for use and reuse.

The ICT tools and infrastructure consist of hardware, software, and peopleware (the roles played by people in facilitating the creation, use, sharing, and storage of knowledge) and serve as an enabler of knowledge creation, use, sharing, and storage in LOs. They help in building knowledge capital in organizations. The ICT Tools/Infrastructure similarly serve as an enabler for the KRs. Thus, the backbone of the KRs of the organizations.

The KR is the storage system for all knowledge created or generated at the LOs. In this contest, the KR is seen as the database that systematically captures, organizes, and categorizes knowledge-based information of the LOs. Knowledge is codified, indexed, and stored in the KR with the aid of information technology under the assumption that it can be retrieved, used, transferable, and useful to other members of the LOs and the LOs as a whole. The KR serves as a key system used by the LOs to manage the knowledge assets and organizational memories and to connect members of their communities locally and globally via databases. The KRs provides a central location to collect, create, share, and retain knowledge assets and learning resources for use in instructional design and content development for both traditional and non-traditional learning environment of LOs.

6. Conclusion and Recommendation

The study sought to assess the role of KRs in managing knowledge in LOs, specifically, within the Ghanaian context. Based on the analyzed data, it was realized that despite the acknowledgment by some of the respondents of the existence and understanding of KR, capturing and storage of knowledge in the repositories was not encouraging while accessibility to the KRs for use and KM was minimal at the LOs which resulted in the absence of a culture of learning. Generally, the LOs did not have proper ICT Tools and infrastructure that could support the KRs and KM processes although the Intranet and portal recorded minimal technological support for KM at the LOs. The viability of groupware tools and weblog tools in support of knowledge sharing and ultimately

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KM at the LOs was not encouraging. Again, the KRs were not user-friendly, did not make knowledge sharing easy at the LOs, and did not facilitate effective collaboration.

The study, concludes that despite the high level of appreciation and understanding of the concept of KM, KRs, and LOs; and the acknowledgment that KRs play critical roles in managing knowledge in LOs, the KRs were not user-friendly and fully utilized or accessible for KM practices at the LOs. In addition, the absence of fully integrated ICT Tools and Infrastructure failed to effectively promote proper KM initiatives at the LOs.

Based on the findings and conclusion, it is recommended that

- The LOs should intensify the deployment and integration of ICT tools such as an intranet, portals, groupware, and weblog that can support the KRs and KM processes
- There should be more collaboration for effective KM practices at the LOs
- Systems and procedures should be put in place to encourage the capturing and storage of knowledge into the KRs of the LOs.
- the KRs should be re-structured to be user-friendly, accessible, and usable

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