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Use of information and communication technologies to support knowledge sharing in development organisations

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Abstract: This paper aims to identify knowledge sharing mediums used in development organisations and determine how different technologies support knowledge sharing. Results explore the strategies for using ICTs to extract, share, and disseminate knowledge. The qualitative data was gained from interviews with 11 knowledge management practitioners working in Kenya's development organisations. All interview questions were open-ended and were consistent across the interview sessions. Qualitative data were analysed in themes using NVivo. Findings show that knowledge sharing in development organisations was supported by ICT-based tools, social media tools and collaborative tools. These tools were used for knowledge extraction, sharing and dissemination. The study revealed that knowledge sharing was influenced by several factors key among them top management support, technology, reward system, culture and trust. Knowledge sharing was obstructed by individual, organisational, and technological factors. This research is valuable in identifying ICT-based knowledge sharing practices unique to development organisations.

Keywords: knowledge management; knowledge sharing; knowledge extraction; knowledge dissemination; development organisations; information and communication technologies; ICTs.

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Biographical notes: Peter Gatiti is the Associate Vice Provost and University Librarian at the Aga Khan University, a private international university whose mission is to improve the quality of life in the developing world. His research interests focus on knowledge management, bibliometric analysis, systematic reviews and evidence-based practice. He holds an MSc in Information Systems from the Leeds Metropolitan University and is currently pursuing his PhD at Bolton University. He has attended fellowship programs at the University of Alberta and University of Illinois. He is active in professional associations and is a member of the IFLA Statistics & Evaluation Section Standing Committee.

1 Introduction

Knowledge is viewed as an important factor that furthers organisational development (Hansen et al., 1999; Huysman and de Wit, 2003; Nonaka and Takeuchi, 1995). Knowledge sharing has also been identified as an important factor for evaluating the performance of organisations (Hendriks, 1999). However, sharing knowledge and especially in the not-for-profit sector, is challenging as development organisations operate in complex environments (DFID, 2014). Previous research indicates that ICT is pivotal in sharing knowledge (Büchel, 2001; Huysman and de Wit, 2003; Nonaka and Takeuchi, 1995). However, ICT-supported knowledge sharing initiatives are underutilised (Tsui et al., 2005). There is a lack of clarity about the role ICT tools play in organisations' knowledge sharing processes (Nelissen et al., 2008).

While ICT-based knowledge sharing tools have been implemented in various organisations, development organisations, in particular, face different types of challenges when compared to for-profit-organisations. Several studies indicate that development organisations are keen to adopt knowledge sharing strategies (Rathi and Given, 2017; Ragsdell, 2016; Tounkara and Arduin, 2015; Staiger-Rivas et al., 2010; Chao et al., 2011). There is consensus among knowledge management scholars that information and communication technologies play an essential role in enhancing knowledge sharing (Antonova et al., 2011; Harvey and Mitchell, 2012; Hafeez-Baig and Gururajan, 2012; Dewah, 2014; Sian Lee and Kelkar, 2013; Ali and Avdic, 2015). However, there appears to be inadequate empirical research on ICT enhanced knowledge sharing in the context of not-for-profit organisations and development organisations in particular (Tong and Shaikh, 2010). This is an important domain given that development organisations create a variety of knowledge that can aid in sustainable development.

Subashini et al. (2011) noted that ICTs enable information sharing, which plays a critical role in knowledge sharing. Similarly, Mohamed et al. (2008) suggested that ICT-based tools are appropriate in enabling effective and efficient decision making, assisting faster data analysis and precisely enabling knowledge extraction, sharing and dissemination. Despite the potential of ICTs in enabling knowledge sharing, the role of social media tools and collaborative tools forms examples of some of the tools currently being used to facilitate knowledge sharing in development organisations, which forms part of this study's findings.

The current research addresses the literature gap by introducing a non-exhaustive list of knowledge sharing mediums specific to development organisations. The study examines the strategic approach to using ICTs to support knowledge sharing from exploratory interviews conducted with 11 knowledge management practitioners in Kenya. This contribution proves valuable in understanding strategies for using ICTs for knowledge sharing. Therefore, this study uniquely positions itself to add to the multi-domain literature including, knowledge sharing, strategic use of ICTs in knowledge sharing, challenges to knowledge sharing, factors promoting knowledge sharing and most importantly, literature on development organisations. The study will discuss these domains in detail in the following overview of the literature, prior to exploring the methodology, findings and conclusions.

2 Literature review

Development organisations are faced with the challenge of creating credible knowledge, sharing it, applying knowledge in policy and acting on it in collaboration with others (Patnaik and Prasad, 2013). As noted by Carroll (2018), development organisations are non-governmental organisations established to serve the public's interest, such as community assistance, education, science, literary, or religion. Development organisations can also be seen as key third sector actors on development landscapes (Lewis, 2010). As noted by Marchant (2017), development organisations are founded on the assumption that the market is not adequate, and there are critical parts of the social world, which the profit-making organisations are not designed to support or enhance, like poverty eradication and social wellbeing.

In the literature, various terms are used to refer to development organisations. For example, in the USA, development organisations are called private voluntary organisations, while in the UK; they are called 'voluntary organisations' or 'charity organisations'. In most African countries, they are called voluntary development organisations (Paul and Israel, 1991). For this study, development organisations are considered as organisations doing non-for-profit work.

In Kenya, the not-for-profit sector includes a diverse grouping of institutions including, small welfare and community based or localised traditional welfare associations to big and secular social-economic institutions (Kanyinga and Mitullah, 2007). In this study, development organisations are considered under the following categories: international organisations, government institutions, private sector support organisations, financial institutions, training and research centres, civil society organisations, development consulting firms, information providers, and grantmakers.

Although the past decade has seen rapid development of research in knowledge sharing, different researchers have used the term 'knowledge sharing' to mean different things. For example, Van Der Meer et al. (2009) defined knowledge sharing as the process of transferring or disseminating organisational knowledge. Lichtenstein and Hunter (2008) offered a more specific view of knowledge sharing, describing it as a 'complex process involving the contribution of knowledge by the organisation or its people, and the collection, assimilation and application of knowledge by the organisation or its people'. The operational definition of knowledge sharing adopted for this study was: 'activities of transferring or disseminating knowledge from one person, group or organisation to another' (Lee, 2001). This definition has a broad and inclusive scope that covers the different types of knowledge sharing processes examined in this study. The literature also identifies reasons for using technology to support knowledge sharing, including gathering, documenting and preserving knowledge (Ofori-Dwumfuo and Kommey, 2013), creating, storing, sharing and distributing knowledge (Ryan and Prybutok, 2001), speed up knowledge gathering and simplify information dissemination (Spingies, 2010).

Knowledge sharing tools also take different mediums such as ICT tools, social media tools and collaboration tools. However, in the literature, each medium is described differently. For example, ICTs are defined as a diverse set of technological tools and resources used to transmit, store, create, share or exchange information (UNESCO Institute for Statistics, 2009). These technological tools include computers, websites, e-mails, file sharing, Google drive and Intranet (Sian Lee and Kelkar, 2013). According to Kaba and Ramaiah (2019), knowledge workers depend heavily on ICTs to acquire,

create and share knowledge. Kaba and Ramaiah (2019) investigated the application of ICT tools in knowledge sharing in the UAE among faculty members. They established that knowledge workers use ICT tools regularly for knowledge sharing, dissemination, and distribution in teaching, learning, and research-related activities. ICTs have been seen as one of the leading enablers of knowledge sharing practices. However, with respect to tacit knowledge sharing, some scholars still debate whether it can be actually shared through ICTs. As noted by Panahi et al. (2016), tacit knowledge sharing needs the support of ICT tools that offer free-form, real-time, interactive and collaborative communication platforms.

Social media tools are seen as computer software and web-based services that enable people to interact with each other. These tools range from Facebook and Twitter, where all the information is provided by people, to Linked In, YouTube, Myspace, and Google plus (Harvey and Mitchell, 2012). Social media tools are critical in making it easier for workers to engage in the creation, sharing, and diffusion of knowledge. They inspire continuous learning and enable the process for the enhancement of organisational knowledge by establishing a network of associations (Meret et al., 2019). Meret et al. (2019) examined how Web 2.0 can be used to overcome the barriers to knowledge sharing. They revealed that technologies could help in re-establishing trust, awareness, emotions, and actual participation so as to support knowledge sharing. However, the extensive use of ICT tools might not be adequate to capture the organisational memory if the human dimension is ignored. As a result, the used Web 2.0 is considered to produce the network for both human dimension and technological connections through, among other tools, social network and blogging tools.

Collaboration tools include online collaboration tools such as Google Docs, Spreadsheets, Blogs and Wikis. ICT tools are an important means for gathering, documenting and preserving knowledge (Ofori-Dwumfuo and Kommey, 2013). ICTs help create, store, share, and distribute knowledge (Ryan and Prybutok, 2001) and are also important in knowledge sharing processes (Lakshman, 2007). ICTs are also viewed as guides and facilitators to knowledge sharing (Nelissen et al., 2008). Wenneker et al. (2007) argue that ICTs can be categorised into three different knowledge-sharing forms: acquiring, donating and exchanging knowledge.

Hendriks (1999) noted that ICTs could enhance knowledge sharing by lowering barriers between knowledge workers and improving access to information about knowledge. Dewah (2014) examined the use of ICTs for promoting knowledge retention and suggested that to improve its use, organisations should enhance access to various technologies, and employees should have access to the Internet. Hafeez-Baig and Gururajan (2012) aimed to discern the effect of ICT implementation on knowledge management by analysing nine variables: mutual trust, learning, leadership, incentives and rewards, formalisation, and T-shaped skills. The results indicated that all of these variables played significant roles in the lifecycle of creating, managing and sharing organisational knowledge. Antonova et al. (2011) tested an integrated knowledge sharing model and knowledge transfer to understand factors enabling IT in organisations. They revealed that organisations mainly considered knowledge sharing and transfer as unilateral processes. Nelissen et al. (2008) explored how ICT corresponds with knowledge sharing in organisations by categorising different perspectives of ICT-enabled knowledge sharing as 'ICT as a guide' and 'ICT as a facilitator.' They linked the

objectivist approach to ICT as a guide and the subjectivist approach to ICT as a facilitator.

Sian Lee and Kelkar (2013) investigated the use of ICT in supporting knowledge sharing and the types of ICTs that individuals used to facilitate knowledge management practices. They used the SECI model by Nonaka (1994), which is a four-dimensional model that clusters different phases of knowledge creation and sharing. The results showed a correlation between ICT and various knowledge creation processes. A single ICT and combinations of ICTs were frequently used to facilitate different phases of the SECI model. Kant and Singh (2008) investigated the relationships among ICT-supported enablers of knowledge sharing and revealed that ICT was central to knowledge sharing. Wencker et al. (2007) examined the role of ICT tools in routine knowledge sharing processes in organisational teams. They assessed knowledge sharing processes in four project teams and categorised communication activities into three different knowledge-sharing forms: acquiring, donating and exchanging knowledge. Yuan et al. (2013) examined how different generations of ICTs addressed the challenges of knowledge sharing. They found that the most popular communication tools were email, instant messaging, telephone, and video conferencing. However, no single ICT could satisfy all employees' communication and knowledge-sharing needs. That study suggested that knowledge workers should use different combinations of ICT tools. Lavtar (2013) investigated the impact of ICT in creating organisational knowledge and revealed that the role of ICT had changed significantly as organisations sought to obtain a competitive advantage through new technologies. The findings implied that knowledge sharing and mutual information provision in an organisation were vital for successful performance and competitive advantage.

Development organisations encounter various challenges that hinder knowledge-sharing initiatives. For example, it is difficult for this sector to retain knowledge as most organisations operate with voluntary workers, and knowledge activities are not included in their job descriptions. Besides, these organisations operate within stringent budgets that prevent long-term investment in knowledge sharing programs. Despite these challenges, development organisations have unique characteristics that can support effective knowledge sharing practices. There are some specific studies on knowledge sharing in the development sector. For example, Corfield and Paton (2016) investigated the relationship between knowledge management and culture in three international development charities. Bloice and Burnett (2016) explored the concept of knowledge sharing in the context of social service not-for-profit organisations. Zapata-Cantu and Mondragon (2016) investigated organisational and personal elements that enable not-for-profit organisations to generate and transfer knowledge. Downes and Marchant (2016) evaluated the extent and effectiveness of knowledge management in community service organisations. Rathil et al. (2014) examined the knowledge requirements of not-for-profit organisations. Stadler et al. (2013) examined the use and application of reflexive ethnography as an interpretative method for researching knowledge practices within festival organisations, and Hume et al. (2012) examined the role of knowledge management in not-for-profit organisations.

Although many development practitioners acknowledge the role of knowledge in development, studies on ICT-driven knowledge sharing remains limited. However, several studies, primarily focusing on development organisations, have been conducted on ICT driven knowledge sharing. For example, Ofori-Dwumfuo and Kommey (2013) examined using ICT tools in knowledge management in a Ghanaian state organisation.

Guzmán (2007) examined the use of ICT for knowledge sharing at Bellanet, an ICT for development (ICT4D) organisation that promotes effective knowledge sharing in international development. Jain (2006) explored knowledge management portals as enablers for institutional competitiveness in the Southern African Development Community. Van Der Meer et al. (2009) examined how organisations shared knowledge for sustainable development. Ringel-Bickelmaier and Ringel (2010) reviewed approaches taken by international organisations to foster knowledge management through implementing knowledge management systems.

Some studies have been conducted on the factors that promote knowledge sharing in organisations. Abbas et al. (2013) categorised these factors into organisation culture factor, trust factor, motivational factor, employee attitude, and socialisation factor. Some researchers have investigated cultural factors' influence on knowledge sharing (Ardichvili et al., 2005; Li, 2009; Li et al., 2007). Other researchers have examined factors that motivate knowledge sharing in online communities (Cheung et al., 2013; Chiu et al., 2011; Huffaker and Lai, 2007; Ma and Yuen, 2011). Ho et al. (2010) examined the effect of trust on organisational knowledge sharing, while Ardichvili (2008) developed a framework for identifying enablers and barriers to effective knowledge sharing in online environments. Likewise, Li and Li (2010) and Zhang et al. (2017) investigated the impact of social capital on knowledge sharing.

Despite its growing popularity, knowledge sharing remains a complex task, and some organisations still encounter challenges in its implementation. According to Collison and Parcell (2007), the private and development sectors face similar challenges in implementing knowledge-sharing initiatives. These challenges include encouraging information flow, developing monitoring and evaluation metrics and encouraging experts to share tacit knowledge. Despite these similarities, some knowledge sharing challenges are specific to not-for-profit organisations (Quaggiotto, 2005). These include a lack of a clear definition of knowledge sharing boundaries and a lack of staff engagement in knowledge sharing initiatives. Khe Foon and Hara (2007) noted barriers to knowledge sharing, such as lack of new knowledge to contribute, lack of subject matter expertise, lack of time, poor technology, and competing priorities. Other identified barriers include inactive participation by members and employee competitiveness (Rosenblatt, 2003; Suh and Shin, 2010).

Like profit-making organisations, development organisations can enhance knowledge sharing by implementing strategies such as reward systems, social capital, culture, trust, willingness to share knowledge, technology, and leadership support. Asrar-ul-Haq and Anwar (2016) noted that organisational structure might facilitate or inhibit knowledge sharing in organisations. Although ICT is a major enabler of knowledge sharing, there are different schools of thought regarding its potential in facilitating knowledge sharing. Few studies have tried to track the outcomes of knowledge sharing strategies to inform future practice. Examining ICT enabled knowledge sharing strategies could enhance understanding of what works across various development organisations.

In the sections that follow, the paper will present different strategies of using ICTs to support knowledge sharing, as viewed by development organisations, which emerged from the interview data. Interviewees discussed the application of ICTs in knowledge sharing, the SECI model's importance, the ICT tools, social media tools, and collaboration tools. They also discussed factors that affect knowledge sharing and

examined strategies that may enhance ICT driven knowledge sharing. The section that follows describes the methodology used in the design of the study.

3 Methodology

The researcher collected data from selected development organisations through interviewing knowledge management experts. A total of 11 knowledge management experts were interviewed. Out of the 11, four were information officers, two digital learning experts, a customer service officer, a communication manager, two knowledge managers, an ICT technician, a regional manager, and a project manager.

The interview questions were semi-structured to enable the interviewees to remain with the context of the study while allowing them to offer in-depth information. Twenty-four interview questions were developed and placed in eight parts. The first part contained questions that sought to describe the organisations' profile. In the second questions, the interviewer sought to understand the knowledge management expert's perceptions on the usefulness of using ICTs in knowledge sharing processes. The third question asked about knowledge sharing tools, while the fourth part examined the drivers for using ICTs for sharing knowledge. The fifth and sixth part inquired about factors that enhance or hinder knowledge sharing. The last part of the interview inquired about knowledge sharing strategies and best practices specific to the development sector.

Two expert knowledge management practitioners from the selected development organisations and a qualitative research expert reviewed the interview questions guide for content, flow, appropriateness, and structure. The interview guide was pretested among two participants to check the flow of questions and whether they elicited the expected responses.

The 11 key informants were drawn from selected development organisations, including the Aga Khan Foundation, UN-Habitat, International Livestock Research Institute, International Centre of Insect Physiology and Ecology, World Vision, YMCA, Kenya Libraries and Information Services Consortium, Kenya Revenue Authority and Parliament of Kenya. These organisations were found to be more advanced in terms of knowledge management. They had knowledge management departments with knowledge management personnel who were engaged in this study to share their knowledge sharing practices. Purposive sampling was used to identify the development practitioners working in development organisations with knowledge management programs. The interviews were conducted between July and August 2019.

Each interview session lasted around 30–45 minutes and was conducted separately through face-to-face meetings and telephone calls. This approach is deemed adequate, mainly when participants cannot be directly observed. Interview participants were able to provide historical information. Although the semi-structured interview approach provided the researcher control over the line of questioning, the researcher was cautious as interviews provide indirect information filtered through the interviewees' views. The presence of the researcher may also bias the interview responses. However, the researcher avoided this shortcoming by asking all participants uniform questions.

Respondents were asked questions that aimed to elicit more revealing information on the use of ICTs for knowledge sharing. All interview questions were open-ended and were consistent across the interview sessions. However, the order of questions, terms used and probing questions differed among participants. The interviewer used some level

of systematisation in the questioning to help uncover respondents' opinions, although the way the respondents structured their responses was respected. Respondents' answers were kept confidential, and they remained anonymous throughout the analysis. The respondents were assured that their identity would not be revealed and their responses would be kept confidential, which was achieved by focusing on the content of the discussion instead of 'who' discussed 'what'. This helped to win their voluntary contribution and ensured openness and sincerity in their responses.

Data were captured using an audio recorder and analysed through content analysis. During the interview sessions, notes were taken as a backup for the audio recording. After the interviews, the researcher verbatim transcribed the audio recordings, and then the transcripts and field notes were read comprehensively to obtain a thorough understanding of the content of the interview discussions. Coding was then performed, which included assigning labels to units identified in the transcripts. The text was then organised into themes and categories using NVivo QSR (version 11) for efficient data management. The results are discussed in the section that follows, and pseudonyms are used to refer to participants.

4 Key findings and discussion

The researcher analysed the main themes related to strategies for using ICTs for knowledge sharing. Four common themes were identified following a detailed critical literature review. The themes included applying ICTs in knowledge sharing, factors affecting knowledge sharing, knowledge sharing strategies, and enhancing knowledge sharing. Several sub-themes were identified from the main themes. The sub-themes were used to develop 24 interview questions grouped in 8 categories as illustrated in Table 1.

Table 1 Main themes and sub-themes

<i>Main themes</i>	<i>Sub-themes</i>
Application of ICTs in knowledge sharing	<ul style="list-style-type: none"> • Knowledge sharing tools • Knowledge sharing and disseminating tools
Factors affecting knowledge sharing	<ul style="list-style-type: none"> • Promotion factors • Obstruction factors
Knowledge sharing strategies	<ul style="list-style-type: none"> • Knowledge sharing policies • Components of a knowledge sharing strategy
Enhancing knowledge sharing	<ul style="list-style-type: none"> • Best practices in using ICT tools in knowledge sharing

4.1 *Application of ICTs in knowledge sharing*

Development workers use a variety of ICTs for different knowledge sharing purposes.

The most common examples of ICT tools described in the interviews include SharePoint, MS Teams, Slack, HeyOrca, Skype, WhatsApp, learning management systems, shared drive, blogs, content management system, video recording, a database of experts, collaborative platform, websites, repositories, online portal, Google Drives,

calendars, Google Docs and Drawbar. When asked about the ICT-based tools used in their organisation, one respondent stated that:

“We have a website, and we also use an intranet for sharing information by staff and for easier access to internal information. We also use Google drives for storing reports, information created management systems, and we are implementing digital content management.” (KM1)

Some of the development practitioners had created an internet platform where they kept project documents. Others had a knowledge sharing platform that had several functionalities to enable knowledge sharing. These were such as live chat, group chat, one-on-one discussion, and real-time conversation. It was also noted that YouTube, Facebook, and websites were used for streaming public seminars. A recurring theme among the key informants was the use of social media. These tools included: Facebook, Twitter, LinkedIn, Instagram, YouTube, and WhatsApp. Twitter was the most used social media, followed by Facebook, YouTube and LinkedIn.

Findings from the interviews identified a number of collaboration tools that were used in development organisations. One of the collaboration tools reported by the respondents was slack. Slack functions (e.g., Skype) allowed collaboration within an organisation and teams. It also allowed the sharing of information, live calls, and discussions. HeyOrca was another collaborative tool used in team collaboration. Other collaboration tools were Skype for business and WhatsApp, which enabled instant messaging for global teams. According to one respondent, Google Docs were efficient as they can be used anywhere irrespective of the location. Further, Google sheets, Google Docs and wikis were identified as important collaborative tools in various organisations. Another informant recounted that collaborative tools such as wikis and spreadsheets were linked to their learning management system. This informant noted that:

“Wiki is founded in our learning management system, and it allows learners to collaborate. Some of the staff prefer to use Google Docs from where learners can participate, and gain inputs, and it can be put into class setup allowing learners to share.” (KM5)

ICT tools were considered critical in knowledge extraction, scrutiny, and synthesis, as observed by one key informant from a leading organisation in the livestock industry. That respondent noted that laptops were used by researchers in capturing data from farmers on their livestock conditions, including information about pest attacks, diseases, and milk production. Data collected from these farmers were then fed into statistical software and analysed to draw meaning that was then used to advise farmers on how to improve their livelihoods through their livestock. In other sectors, ICT was reported to enable people to create and actualise their dreams by helping them to develop things they envisioned. For example, one respondent noted that:

“Without ICT, an employee might have an idea but would not know how to share the information. However, with ICT and platforms such as blogs, shared Google drives and Google groups, employees can now write their experiences and share with others.” (KM4)

In respect to knowledge creation, another respondent stated that:

“People can develop proposals based on what they collect on the ground, and others may take photos, videos, or use social media to showcase what they need to come together for. A good example is a way photographers and videographers take videos and photos of climate change to show how the glaciers break as a way of sensitising people on the dangers of climate change.” (KM7)

ICT was also identified as being critical in knowledge creation as it enables employees to go through the knowledge creation process smoothly, especially when it is hard to understand in one instance. The interviews highlighted how ICTs were important in knowledge sharing and dissemination. One respondent noted that ICT enhanced sharing of research output.

“ICT is crucial in communicating research output. The research findings can be easily and widely shared using ICT. All the knowledge sharing tools allow us to reach a wider audience. I believe without ICT; we would not achieve all that. We get a lot of money from donors who expect us to share whatever we innovate widely. ICT is the key to achieving that.” (KM6)

ICT was also identified as an enabler of knowledge sharing.

“ICT eliminates the constraint of time in knowledge sharing. Sharing of knowledge through ICT tools such as email, MS Teams and WhatsApp is instant.” (KM1)

ICT was also considered critical in employee training, which is a practice that supports knowledge sharing. One respondent commented that:

“ICTs can be used in creating training platforms that users can use on a sequence of activities that can be used to arrive at a solution to a given problem.” (KM4)

ICT tools provided a platform to collaborate and facilitated access to information for research. ICT tools enabled development workers to find out who was doing what and from which country. This enhanced collaboration across dispersed teams. One respondent noted:

“ICT had reduced the amount of money spent on travelling for training, as training can now be done remotely using ICT tools.” (KM2)

In another example, ICT was shown to be useful in times of calamities. This was described by one respondent who noted that in times of calamities, pictures could be used to mobilise people and resources to address the problems at hand.

“ICT has facilitated a quicker response rate from the people who are facing the challenge of responding to calamities.” (KM7)

4.2 Knowledge sharing promotion factors

The responses from the interviewees revealed that organisations promoted knowledge sharing through different techniques. Regarding the use of technology to promote knowledge sharing, one respondent pointed out that:

“We promote knowledge sharing through creating awareness around the tools and how knowledge sharing would increase efficiency. We equip people with skills on how to use knowledge sharing tools.” (KM2)

Another interviewee described how their organisation promoted knowledge sharing among employees.

“Our senior leaders motivate us to share knowledge through team building. We have morning coffee every Friday whereby everyone in the organisation sits down to know each other. It creates teamwork as new members are introduced during the coffee meetings.” (KM1)

According to one respondent, knowledge sharing was promoted by offering employees some form of reward. Employees were recognised in the workplace and sponsored to present research findings in scientific conferences. Commenting on the promotion factors, another interviewee noted that providing employees with research opportunities was a motivation technique for knowledge sharing. One respondent recounted that:

“We have conferences where members of staff are encouraged to come up with presentations, papers and journal articles. They present and publish papers through our organisation.” (KM4)

Knowledge sharing was also promoted in organisations through employee sensitisation. According to one respondent, sensitisation should be accompanied by training employees on how to use ICT tools for knowledge sharing. This view was echoed by another informant who maintained that knowledge sharing could be promoted by creating a knowledge sharing culture. While explaining how culture supported knowledge sharing, another respondent explained that:

“My organisation strives to have an enabling knowledge sharing culture. We have ad hoc meetings where staff share challenges and come up with possible solutions. This approach creates an avenue for sharing knowledge. We document some challenges and escalate to senior leadership.” (KM9)

Another respondent alluded to the notion of promoting knowledge sharing.

“It is important to create trust so that if I put my documents in the public domain, they will not be used for malicious purposes.” (KM4)

Similarly, another respondent explained how building trust supported knowledge sharing and pointed out that:

“Creating trust is another key area. Sometimes the research findings you get may not auger well with a particular group, and you may not disseminate such information without auditing it. Trust is a key area, especially in politics. You can come up with findings that may not be favourable to some segments.” (KM9)

Demonstrating to staff the value of knowledge sharing was thought to motivate them to share knowledge. One informant noted that knowledge sharing improves employee’s productivity and further pointed out that:

“We have a programme called knowledge management sharing initiative that helps to create awareness to employees on knowledge management. It enlightens people about knowledge sharing as when they share knowledge; they become more productive.” (KM8)

Support from top management and developing a knowledge sharing policy were also identified as enhancers. In one case, a respondent recounted that:

“The management has set up a departmental website. Departments are given targets on the amount of information that they are expected to put online. The department that performs well is rewarded according to the established reward system. The organisation has also developed a knowledge sharing framework. Training on how to access information resources is also provided.” (KM10)

4.3 Knowledge sharing obstruction factors

The interviews with key informants raised several individual factors that hindered knowledge sharing in development organisations. Most respondents were of the view that lack of time was an obstacle to knowledge sharing. For example, one interviewee pointed out:

“There are times when you have excess work, and you do not get time to update the knowledge base.” (KM1)

Another barrier that was identified was the selfishness of individuals. One participant commented:

“Some individuals are selfish. People get to know the information, but they do not want to share it with others.” (KM11)

It was highlighted that some employees were selfish and might not share knowledge as they wanted to remain the only experts in their areas. This was echoed by another respondent who stated:

“People want to remain experts in their areas, and this acts as an inhibitor to knowledge sharing.” (KM5)

According to one respondent, some people preferred owning business processes and getting credit for themselves. Lack of appreciation of the value of knowledge sharing was also thought to inhibit knowledge sharing. One respondent noted that lack of awareness of the importance of sharing knowledge was an impediment.

“One of the barriers of knowledge sharing is lack of awareness of the benefit of sharing. Some people do not appreciate why they need to share knowledge.” (KM8)

Another factor that prevented knowledge sharing was a lack of trust. One respondent shared that:

“There is lack of trust whereby you feel like the top management do not trust you or they think that the way of doing things is not the way you believe things should be done.” (KM1)

Some individuals feared providing the wrong information, and this impeded knowledge sharing. According to one respondent:

“There is fear that if you share what you know, someone will hold that information as a powerful tool to advance their own agenda. Most of the time, when someone is knowledgeable, they do not want to share their knowledge with other people. Long-serving staff do not easily share knowledge with newer staff.” (KM3)

Another respondent reported that people failed to share knowledge because of the fear that giving information may put them at a disadvantage. A contributing factor identified by one respondent was the lack of self-esteem among individual members.

“We normally do not believe in ourselves when we have something to share. We tend to conceal information because we do not think that our knowledge will be accepted. We sometimes think we are inferior and lack the confidence to share knowledge.” (KM11)

A key factor that hindered knowledge sharing was organisational culture. As highlighted by many respondents, an organisation culture may be for or against knowledge sharing. One respondent highlighted that:

“Normally, knowledge sharing is not successful because of the organisational culture where everybody believes in rumours.” (KM11)

Another respondent singled out the lack of management support as the most significant inhibitor to knowledge sharing. Other impediments included inadequate infrastructure, lack of knowledge sharing policies and bureaucracy.

Findings from the discussions with key informants also revealed several technical factors that inhibited knowledge sharing. For example, resistance to the new technology was an impediment. According to a communication expert, internet connectivity, impaired knowledge sharing as some staff worked from remote areas. Similarly, a manager in an ICT development company stated that unreliable internet and power connectivity presented some knowledge sharing challenges. Commenting on technical barriers, two respondents commented that technical expertise was a major impediment to knowledge sharing.

4.4 Knowledge sharing strategies

Discussions with the key informants revealed that most of the organisations did not have a knowledge sharing strategy. In addition, most organisations did not have a lead person responsible for knowledge management. In some of the organisations, knowledge management functions were handled by the communications department. Some strategies that were identified in the discussions with the interviewees were establishing a strategic knowledge management unit and making information easily accessible.

Components of a good knowledge sharing strategy as identified by the respondents included: accessibility, top management support, funding and linking the knowledge sharing strategy to the overall organisation strategy. As noted by one respondent:

“One thing that should be emphasised in the knowledge sharing strategy is knowledge creation. The strategy should include how to get knowledge in various sectors in order to capture the best practices.” (KM5)

Another respondent identified standard operating procedures as the most significant component of a knowledge sharing strategy. Other respondents noted that a knowledge sharing strategy should include knowledge harvesting, knowledge creation, knowledge access and knowledge retention. Similarly, one respondent noted that a knowledge sharing strategy should include: knowledge capture, storage, and dissemination. Human resources for knowledge management were also considered a significant component of a knowledge sharing strategy.

Discussions with the key informants revealed aspects of best practice in using ICTs to enhance knowledge sharing. According to one respondent, an organisation should conduct training and capacity building to guide people on how to use ICT tools that were introduced for knowledge sharing. Simplicity and interoperability of ICT tools were also highlighted as best practice. One knowledge manager stated that:

“Users should be able to interact with ease with the system. Make the user interface as simple as possible” (KM3)

One respondent held the view that any knowledge captured should be shared. According to another respondent, ICT tools should create a broad system that collects knowledge across the whole organisation. In another instance, a respondent believed ICT tools should bring standardisation in knowledge reporting across an organisation. When discussing best practices, an interviewee noted:

“Developers should step up and design knowledge management systems with standardised procedures to enable knowledge managers to speak the same message across the organisations.” (KM6)

Another respondent was of the view that the ICT tools should allow two-way communication to support collaboration and support discussions within networks of practice. Other comments related to best practice included: collaboration, quality of information, management support, use of latest technology and skilled workforce. Lastly, one respondent highlighted that in using ICT tools for knowledge sharing, there should be professionalism, trust, and open mindedness.

5 Conclusions

The results of this study contribute to creating awareness regarding the theory, policy and practical implications of using ICTs to improve knowledge sharing practices among development practitioners in Kenyan development organisations. The research captured the use of ICTs in knowledge sharing, the strategies used in knowledge sharing, the factors that affect knowledge sharing and how to enhance knowledge sharing by interviewing 11 knowledge experts from development organisations in Kenya. The findings contribute to identifying ICT tools that can be used by other countries in sub-Saharan Africa to extract, share and disseminate development knowledge. This study also contributes to improving ICTs applications for knowledge sharing through contributing to the development of knowledge taxonomy and participating in the development knowledge network (community of practice).

The research findings contribute a knowledge base of good practice, which offers a helpful reference point for practitioners in the development sector. This study contributes to the literature on developing a knowledge triangle (extraction, sharing, and dissemination), an emerging concept that seeks to enhance the use of knowledge in the development sector. The research findings contribute to the existing theories of ICT-enabled knowledge sharing. It is expected that the results of this research will become a catalyst for increased scholarly work in studying development organisations, which are service-oriented as opposed to product-oriented organisations. It is also expected that the findings will apply to other development organisations based in sub-Saharan Africa and beyond.

This study contributes to the development of knowledge discourse, which is part of development informatics. Knowledge is considered as one of the key factors of production. However, there is a challenge to how knowledge can be shared in non-for-profit organisations. By documenting the ICTs mediums and good practices in extracting, sharing and disseminating development knowledge, the development sector can adopt best knowledge sharing practices.

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