



# The Utilisation of ICTs For Knowledge Management In A Zimbabwean Urban District Council

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## Abstract

**Purpose:** This study established the state of the utilisation of information and communication technologies (ICTs) in Zimbabwean urban district councils to manage municipal knowledge. The way municipal knowledge and service delivery information are managed influences the usefulness and accessibility of the information to the various stakeholders. The effective management of this information thus determines the quality of decisions made by Zimbabwean urban councils. **Research design, data and methodology:** The study adopted a single case study design, employing a purely qualitative research approach. The purposive sampling technique was used to select key informants who participated in the study. Collected data were analysed using thematic content analysis. **Results:** The findings revealed that the Masvingo City Council was not fully utilising ICTs to manage service delivery knowledge. It has been at a minimum level in cases where they have been used. **Conclusions:** This research contributes to the Zimbabwean local government body of knowledge, providing the evidence needed to form a basis for future research, focusing on knowledge management and information technology utilisation in municipal organisations. The researchers recommended that Masvingo City Council direct more resources towards improving the existing ICT infrastructure and employee training programmes to improve the management of the organisation's knowledge.

**Keywords:** ICT Utilisation, Technology, Municipalities, Urban District Councils, Knowledge Management

**JEL Classification Code:** D83, H11, H75, N77, O14

## 1. Introduction<sup>a</sup>

Technology utilisation enables the effortless capture, storing, extraction and distribution of knowledge through organisations, between organisations and national boundaries (Denner & Diaz, 2013; Salzano, Maurer, Wyvratt, Stewart, Peck, Rygiel, & Petree, 2016). Since it is imperative to appreciate the value of an organisation's information, it is also essential to comprehend the technology uti-

lised for storing, manipulating, and distributing the information (Dalkir, 2017). Techniques and tools to capture critical knowledge are necessary for an organisation to sustain its competitive advantage. Information technology enables the sharing together with the augmented progression of knowledge, and it permits the dissemination of information at growing efficiencies and speeds (Becerra-Fernandez & Sabherwal, 2015). Information technology can transform government organisational stru-

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tures by enabling sharing knowledge between individuals, institutions, and organisations. This feat comes to be of paramount significance in the process of formulating and developing strategic documents, such as public policies (Radu, Ba<sup>^</sup>rga<sup>~</sup>oanu, Durach, & Udrea, 2018). According to Kekana (2002) in Kabanda (2012), developments in communication technologies have helped many countries better their populations' lives through improved health, education, and public service systems and enhanced economies, among other things. Then, according to Honeycutt (2000), knowledge management systems convey the precise information to the correct individuals promptly, afford them the means for analysing that information, and bestow upon them the power to respond to the perception they collect from that information at high speed. Information technology plays a robust part in planning how local government organisations deliver information and services to residents and other stakeholders (Radu, Ba<sup>^</sup>rga<sup>~</sup>oanu, Durach, & Udrea, 2018).

Local governments are usually the custodians of most information concerning the areas under their jurisdictions. The management of this knowledge and information determines the usefulness and accessibility of the information to the various stakeholders (African Local Governance Program, 2006; Ekionea, Fillion, & Koffi, 2012; Gaffoor & Cloete, 2010). Additionally, the management of this information determines the quality of decisions made by the urban councils. The information technologies used to facilitate Knowledge Management (KM) are known as knowledge management technologies (Becerra-Fernandez & Sabherwal, 2015). One can view KM technologies as information technologies whose primary focus is managing, storing, and distributing organisational knowledge (Halawi, McCarthy, & Aronson, 2017) rather than information processing. These information technologies enable user access to the required knowledge and increase the interactions between users, especially experts (Abualoush, Masa<sup>'</sup>deh, Bataineh, & Alrowwad, 2018). In addition, KM technologies support knowledge management systems and profit from the KM infrastructure, particularly the Information Technology (IT) infrastructure. KM technologies make up a crucial element of knowledge management systems. KM technologies consist of the evolving Web 2.0 technologies, for instance, blogs and wikis (Becerra-Fernandez & Sabherwal, 2015).

Fewer studies have highlighted KM in the public sector than those focusing on private sector KM even though KM initiatives have always been an integral part of government tasks, indivisible from strategy, consultation, planning, and implementation (Akil, Soemaryani, Hilmiana, & Joeliaty, 2021; Massaro, Dumay, & Garlati, 2015). Additionally, Gambakwe and Sandada (2016) noted that it would be

insightful if other studies were carried out to investigate KM initiatives in public enterprises and government departments in the Zimbabwean context. Knowledge management directly correlates with service delivery founded on specific and homogeneous procedures adapted to the concerns of internal or external clients (North & Kumta, 2018). This paper thus reports findings of a study to establish the extent of technology usage in managing organisational knowledge in a Zimbabwean urban district council. The paper answers the following research question:

*What is the current level of information technology use for knowledge management in Zimbabwean urban district councils?*

The rest of the paper is structured as follows: Section 2 reviews related literature focusing on the KM process, KM systems and KM technologies. Section 3 presents the research model utilised for the research, while section 4 deals with the methodology for the research. Sections 5 and 6 present the data analysis and discussion, respectively, while the study's conclusion is presented in section 7.

## 2. Literature Review

### 2.1. Knowledge Management Process

In the context of this research, knowledge management is defined as the capture, sharing and utilisation of knowledge and the achievement of organisational learning. Knowledge management has evolved to become a key element in deciding an organisation's competitiveness (Becerra-Fernandez & Sabherwal, 2015; Ekionea, Fillion, & Koffi, 2012; Halawi, McCarthy, & Aronson, 2017). This evolution has resulted in the proliferation of many different processes and models of managing knowledge. Knowledge management processes denote how an organisation handles its knowledge at the different phases of its lifespan in the organisation (KM cycle). This paper focuses on capturing, sharing, and utilising municipal organisation and organisational learning. Knowledge capture is the method through which knowledge is transformed from a tacit form (existing in people, products or organisational entities) to an explicit form and vice-versa through externalisation and internalisation sub-processes (Becerra-Fernandez & Sabherwal, 2015). There is a possibility that the knowledge being captured may be located outside the organisational confines together with consultants, industry rivals, clients, service providers, among other sources. Knowledge sharing is the channel through which solutions move from one point to another (Janus, 2016). Sharing knowledge helps an organisation avoid making the same mistakes, decreasing reliance on the few employees who own critical knowledge while concurrently increasing integration of individual

competencies and improving decision-making (Lee, Shiue, & Chen, 2016).

Knowledge utilisation applies the available knowledge in decision-making and performing tasks using direction and routines. Direction denotes the procedure by which the entity owning the knowledge guides the action of a different entity without transferring to that entity the knowledge fundamental to the direction (Becerra-Fernandez & Sabherwal, 2015). Direction can be observed when an individual who possesses knowledge advises another. Routines include utilising knowledge implanted in processes, guidelines, standards and procedures that direct future actions. Direction and routines are both appropriate with either explicit or tacit knowledge. Knowledge utilisation does not call for the person employing the knowledge to possess an understanding thereof. Organisational learning is the process of growing an organisation's aptitude to appropriate effective action (Baets & van der Linden, 2012). The emphasis is not on actuality but on perceptions of actuality (meanings). A learning organisation is proficient in acquiring, creating and conveying knowledge and adjusting its actions to mirror newly acquired knowledge and perceptions to enable the firm to learn. At the same time, it functions and can rapidly acclimatise to the marketplace and other fluctuations within the environment (Handzic & Zhou, 2005). Organisational learning encompasses the amassing of individuals' knowledge shared with other people inside an organisation (Bstieler, Hemmert, & Barczak, 2017). According to King (2009), organisational learning is one of the fundamental ways the organisation can sustainably improve its knowledge utilisation.

### **2.1.1. Knowledge Management Technologies**

The knowledge management technology infrastructure denotes the software, hardware infrastructure, and an assortment of electronic devices to improve KM processes (Al-Aama, 2014). Web 2.0 technologies, webinars, groupware, knowledge and data repositories, together with other electronic communication tools that enable personnel to connect and team up irrespective of their physical location, are examples of knowledge technology (Intezari, Taskin, & Pauleen, 2017; Salzano, et al., 2016). According to the Organisation for Economic Co-Operation and Development (OECD) 2001 report, the conception of internet technologies has dramatically transformed the prospects for the organisation, distribution and storage of information. Dalkir (2011) concurs, stating that the introduction of the Internet and the World Wide Web has availed inexhaustible sources of knowledge to everyone. The internet offers considerable advantages in the following: firstly, it provides safe storage for vast volumes of data in a way more straightforward to retrieve than the usual filing systems.

Secondly, it enables the combining and organising of information in improved and more beneficial ways. Thirdly, the internet facilitates the distribution of data, both within and among organisations, in a manner that can be administered and managed more effectively than paper-based filing systems. Fourthly, it offers an easier way of granting external parties access to information, enhancing transparency and accountability. Lastly, the internet allows speedy global communications at a meagre cost.

### **2.1.2. Knowledge Management Systems**

Knowledge management systems are the amalgamation of mechanisms and technologies created to assist the KM processes (Becerra-Fernandez & Sabherwal, 2015). There are four main categories of knowledge management: knowledge discovery systems, knowledge capture systems, knowledge sharing systems, and knowledge application systems. Knowledge management systems perform four functions: intermediation, externalisation, internalisation, and cognition (Halawi, McCarthy, & Aronson, 2017). Intermediation is concerned with the connection between people (people to people). It mainly focuses on the exchange of tacit knowledge between individuals. Externalisation deals with connecting information sources. It emphasises explicit knowledge and classifies it according to some classification framework or ontology (Halawi, McCarthy, & Aronson, 2017). Internalisation connects explicit knowledge to people. It involves extracting and filtering knowledge from the external repository. Lastly, the cognition function is concerned with the connection between knowledge and processes.

Knowledge management systems are developed using three groups of technologies: firstly, there are communication technologies that permit users to access the required knowledge and to communicate with each other; secondly, we have collaboration technologies that provide the means to perform teamwork; and thirdly, storage and retrieval technologies that utilise a database management system to store and manage knowledge (Turban, Aronson, & Liang, 2005)

Knowledge capture systems support the process of retrieving either explicit or tacit knowledge that resides within people, artefacts, or organisational entities. These systems can help capture knowledge that resides within or outside organisational boundaries, including consultants, competitors, customers, suppliers, and prior employers of the organisation's new employees. Knowledge sharing systems support the procedure by which explicit or tacit knowledge is transferred to other entities. The effectiveness of knowledge sharing systems is dependent on the interaction amongst people, core work processes, and supporting technologies (Janus, 2016). Knowledge utilisation systems are designed to support the procedure by

which some entities utilise knowledge controlled and owned by other entities without essentially obtaining, or learning, that particular knowledge (Becerra-Fernandez & Sabherwal, 2015). The most successful knowledge organisations can create higher value and achieve growth by creating and effectively using knowledge (Handzic & Zhou, 2005). Technologies utilised for organisational learning include communication technology (e.g. e-mail), knowledge repositories of best practices, and collaborative software systems (Kane & Alavi, 2007).

### 3. Research Model

The governance principles set forth by the Australian Public Service Commission (2007) were a result of private and public sector organisations failing to carry out their mandate as the prevailing scenario in Zimbabwe. However, there is a need to contextualise these principles as the Zimbabwean environment is not a replica of the Australian context. This research focused on six principles: accountability, transparency, integrity, stewardship, efficiency and leadership. The model for this research

offered a guideline for how IT assisted in carrying out organisational knowledge management, focusing on knowledge creation (capture), sharing and utilisation, and organisational learning. It also focused on how organisational learning has a bearing on governance principles and practices. The KM process and the governance principles are delimited within a bracket of contextual variables. Any KM and governance initiative for Zimbabwe should be mindful of the other environmental variables that may affect its implementation. 오류! 참조 원본을 찾을 수 없습니다. gives a diagrammatic representation of the model. The contextual variables include, but are not limited to, people skills, competencies, ideas, intuition, commitment and motivation.

The Task Technology Fit theory (TTF) was deemed appropriate for this research as it can clearly articulate the role of technology in KM. The TTF theory offers a means of quantifying the effectiveness of technology in a system by considering the relationship between the technology and the tasks the technology aims to support (Spies, Grobbelaar, & Botha, 2020). The other theories mainly focus on the factors influencing the adoption while not much attention is given to the actual usage of the technologies.

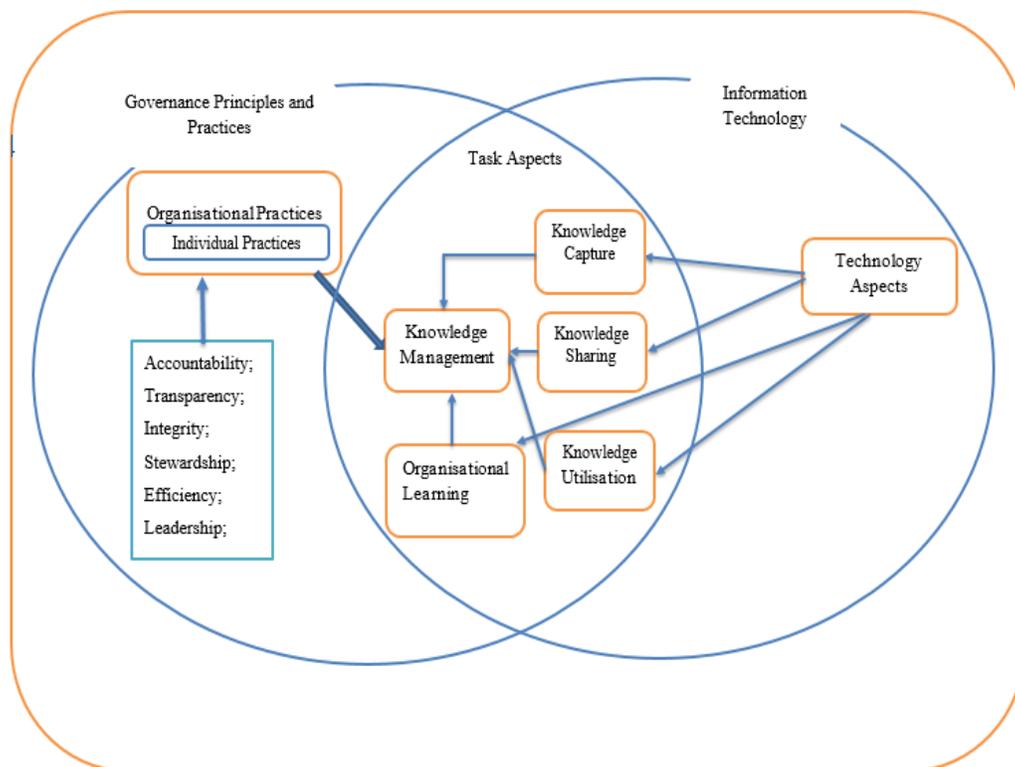


Figure 1: Research Model (source: Author)

This paper focuses on the task aspects that constitute the intersection between governance principles and practices and information technology aspects of the research model. In this context, the tasks aspects are the KM processes: knowledge capture, knowledge sharing, knowledge utilisation, and organisational learning.

#### 4. Methodology

This study was conducted using a single case study design at a Zimbabwean urban district council, namely Masvingo City Council, whereby a purely qualitative research approach was employed to guide the sampling process, data collection and analysis. The city council employs around 400 employees on a permanent and contract basis. Fifteen of the employees are senior managers, while about 20 of the employees are frontline workers, interfacing with the residents. The city council IT section consists of three personnel. The study utilised key informant interviews. The research made use of purposive sampling to select the participants for the key informant interviews to ensure that responses were obtained from the relevant and knowledgeable personnel. The key informants identified in the case of the Masvingo City Council were the three employees in the IT department, the System Administrator, the Network Administrator and the Data Capture Clerk.

The following ethical considerations guided the researchers: firstly, the researchers approached the Town Clerk's office at the Masvingo City Council to request permission to carry out the research, which was granted. Secondly, the researchers obtained an ethical clearance letter from the University of KwaZulu-Natal (UKZN) Ethics Committee. Thirdly, the researchers satisfied the need to protect the dignity and welfare of all the participants by seeking informed consent from the interviewees and letting them decide to take part based on adequate knowledge of the study that was provided. Pseudonyms were used where necessary to maintain the anonymity of respondents. All prospective interviewees were presented with a provision to decline participation in the research, the respondents' decisions were honoured, and the principle of confidentiality of the research data was upheld to the letter. The researchers guarded against the invasion and violation of the respondents' privacy. Lastly, the principal investigator took full responsibility to ensure that the ethical standards were upheld as indicated.

#### 5. Data Analysis

This study utilised semi-structured key informant interviews involving the ICT department personnel. The researchers interviewed three personnel from the Masvingo City Council IT department. The design of the interview schedule was informed by the research model alluded to in the preceding section. Since the researchers identified the research themes during the design of the interview schedule, the deduction of inferences from the interview data was made using direct content analysis. The interview data in this study focused on the following aspects: knowledge capture, knowledge sharing, knowledge utilisation and organisational learning.

##### 5.1. Themes Developed from the Interviews

The three interview recordings were transcribed to MS Word documents using an online tool, GoTranscript manual transcribing software. The interview transcripts were then imported into NVivo data analysis software. The codes and code categories were then created based on the interview questions, which were formulated using the theoretical model developed for the research. The researchers then went on to establish themes and sub-themes from the interview data. Table 1 gives a depiction of the themes and sub-themes extracted from the interview data. The researchers used two methods in this phase which include: first, the identification of word and phrase repetitions through the scanning of the interviews data for words and phrases most commonly used by the respondents, as well as issues that the respondents were passionate about.

**Table 1:** Themes extracted from the data

Themes	Subthemes
IT Infrastructure	Connectivity/Networking
	Computing <ul style="list-style-type: none"> <li>- Hardware</li> <li>- Software</li> <li>- The current state of Technology</li> <li>- IT infrastructure Management and maintenance</li> <li>- Backup infrastructure</li> </ul>
	Residents
	Employees
Stakeholders Involvement In Knowledge Management	Management
	IT Personnel
Knowledge Management Processes	Knowledge Capture
	Knowledge Sharing
	Knowledge Utilisation
	Organisational Learning
Challenges Facing the City Council in KM	IT infrastructure challenges
	Challenges in service delivery turnaround time
	Challenges encountered



The interviewees indicated that the city council maintained a master record for each client associated with an account number. The record comprised the client's static information, including personal details for identification purposes (name, surname, ID number, house number, location, meter number) and the client's contact details (postal address, phone number, e-mail address). The city council also maintains a running file for each client, which contains the monthly billing information for the particular client.

**Speaker 001:** *For each customer, if you buy a stand, we will actually help create a master record, which we call an account number. In that master record, we capture your permanent information, your static information, like the name, the surname, ID number, cell phone number, e-mail number (address) if you have because we are intending in the future to incorporate e-mailing of statement to you. At the moment, we have other customers who have already supplied us with such information like the e-mail and so forth, and we actually supply them with e-statements on demand. If they demand that, we can supply them for free; we do not charge on e-mail information. On e-statements, we do not charge. You will just issue them on request... There is a permanent file, and then there is a running file. Wherever we do our meter reading/capture, and we bill our file updates and closes per month like. If we are in February, if we bill our February, it moves a stage higher and gives room for March to be captured. If we bill for March, it goes a stage higher and gives room for April, so it will continue like that. And our meter records are capable of keeping up to 12 months visible so that you can actually analyse at any one point.*

**Speaker 002:** *Usually, on personal we want to know the property, we take the full names of the owners of the property so that one includes ID (number), the phone (number). If you want the title deeds, you will (process them) in your personal capacity; some may want and some may not, but that is the information that we require, usually on personal. Then on location, we just want to know where he is based, usually in terms of address, so that when we want to send information, we know where to (send it)*

**Speaker 003:** *Oh, we capture our resident names, ID numbers, phone numbers, meter numbers and the location where they stay.*

### 5.2.2. Data Capture Technology

The data collected indicated that the city council was not employing any technology in capturing water usage data at the client premises. The indications were that meter readers would capture the data manually on cards, and the data would then be entered onto the PROMUN system at the data capture office. The city council did not have any data loggers to directly enter the water usage readings on the clients' premises. However, one of the interviewees noted that other urban district councils benefited from a GIZ infrastructure programme, which assisted them in acquiring data loggers, and Masvingo City did not get that support.

**Speaker 001:** *At the moment, it is still manual. Our people, our meter readers, actually go into the field and take some meter readings physically on each and every meter. And after accumulating, after capturing, reading those meter readings, they will just give the data capture there at the office who will start doing...that*

**Speaker 001:** *just because we did not benefit from that GIZ program, some local authorities have gone a step further to employ data loggers on capturing data of meter readings.*

**Speaker 002:** *Just the ordinary computer [Laughter] ...We do not have barcodes or whatever, but we just use the hardware (ordinary) computer...in fact, that is what we recommended last time we requested for new machines. Core i3 and above, so most of the machines are core i3.*

**Speaker 003:** *It is only our desktops using our PROMUN software system*

It was also indicated that residents could also assist in capturing consumption data in cases where their premises were not accessible to the city council meter readers. In such cases, the residents would send their current meter reading by SMS or WhatsApp message to the data capture office. The readings were then subsequently entered into the PROMUN system.

**Speaker 001:** *Yes. All our meter readings are manually done. They are actually manually done except for a few, those who have supplied their cell numbers and those who have taken our cell numbers. If their properties are inaccessible, they can actually send the readings through SMS, and we can actually capture them from here after we get the residents' readings.*

### 5.3. Knowledge Sharing

This section sought to gain insight into the knowledge shared by and within the city council, the technology used to share the knowledge and the challenges faced by city council employees in the process. The researchers also solicited possible ways in which the city council could

improve its knowledge sharing process. The following questions were posed to the interviewees concerning knowledge sharing:

KS1. What type of information is exchanged:

KS1.1. With the residents?

KS1.2. With external stakeholders?

KS1.3. Among employees?

KS2. How does the city council use technology to share information with residents? (e.g. SMS, e-mail, web-portal, social media to share notices, service schedules etc.)

KS3. How does the city council use information technology to share knowledge with external stakeholders? (e.g. suppliers, sister government departments)

KS4. How do employees in the city council interconnect to enable the sharing of knowledge? (e.g. sharing reports via conference call)

The results of the data collected from the above questions are presented in the following sections.

### 5.3.1. Types of Information Exchange

With residents, the city council mainly communicates information about their bills, service interruption schedules and service disruption notices. One interviewee also indicated that the council also communicated with residents with high debt levels for their bills. Issues also communicated with the residents included updates on tariff changes.

The interviewees indicated that the data shared with residents mainly comprised account balances, billing information and transaction histories. The city council also communicated information about tariff updates, water and other service interruptions to the residents.

*Speaker 001: ... We at times just go through the debtors' list and see; for those who are in bad shape, we can actually take their numbers and phone them that "ah do you see your arrear level is in bad shape now can you just come and pay". Moreover, they can also talk to us "what is my bill" through SMS, through WhatsApp, this and that. (So it is basically) billing information especially....The water interruptions and so forth they are normally given through the press and through the media or through Hevoi (FM), our radio station. They are given through those platforms.*

*Speaker 002: Usually, we exchange the bills to tell them the bills (and) the transaction history. Some may want to know what transpired during the period of maybe for a year or what, so we give them the transaction histories.*

*Speaker 003: Updates on tariff charges, we also exchange account balances, then meter readings*

Evidence from the interviews indicated that the city council provided some statistical information to external stakeholders, such as the sizes of residential stands and aged analysis reports detailing the resident debt levels. The city council also gave road closure notifications.

*Speaker 001: We can also exchange the statistic level, especially with the estate agents, they may ask, "what is the area on this stand", and so forth if I am on the computer, I can just beam it up and tell him that "it is so much".*

*Speaker 002: Yes, usually, we give them notifications such as, "We are closing this road, so you need not to move through that road". So usually, we give them the notifications either through the WhatsApp groups and Chindigwana Cheruzivo (Information Calabash) that we talked about (Laughter).*

*Speaker 003: Aged analysis reports. It shows the list of our debtors and the amount owing.*

Amongst employees, exchanges included memos, documents, payslips and their own account balances for services rendered.

*Speaker 001: Yes, employees can actually exchange memos this and that just passing through their e-mails...We have an organisational e-mail but because of our problem at the moment their organisational e-mail was not working but at the time it was up we were actually using that. Secretaries could actually exchange memos and send documents through the internal memo system.*

*Speaker 002: Among employees, people may want to know their salaries, they need the Pay sheets, or they might need a statement of proof of residency, so you just send them to them*

*Speaker 003: Besides account balances, not that I know of.*

### 5.3.2. Knowledge Sharing Technologies

Regarding the utilisation of technology for knowledge sharing in the city council, the interviews indicated that the utilisation was minimal. For starters, during the interviews, the first interviewee indicated that the city council did not have a functional website where residents and stakeholders could access information. The interviewee also mentioned that the city council was not officially using WhatsApp as an official communication channel within the city council or with the residents. However, the interviewee noted that there were some WhatsApp groups for section heads and members of the city council management. It was also indicated that the previous mayor had formed the WhatsApp group to share information updates with the residents.

*Speaker 001: The website is not working at the moment. I think it will be up in a very short time because of the coming in of the network administrator; that is one of his areas... For the City Council, there isn't (an official WhatsApp hotline), but there are some WhatsApp groups like the section heads group and the management WhatsApp group where they can actually share the information (on) what is going on... With residents, there is nothing. But, for example, with the previous mayor, I know he had a group with the residents where he was the admin, and he could actually share with the residents.*

The second interviewee indicated that exchanges between the management and sister government departments were mainly done via e-mail, WhatsApp and telephone calls. However, e-mail was the preferred mode of communication since there was a need to file a copy of the exchange (manually) as evidence of communication. The interviewee also indicated that there was no technology to facilitate conference calls unless one had the capability from one's mobile operator.

*Speaker 002: ... the managers talk with the sister government organisations (from the ministry), so they use either e-mails, WhatsApp, or phone calls. Most of (the communications) are (through) e-mails because usually, they want evidence [Laughter] for communication for filing... Teleconference, usually when (you have it) on your mobile but through the switchboard that much I do not know.*

#### 5.4. Knowledge Utilisation

Concerning knowledge utilisation, the study sought to investigate the application of the available technical knowledge within the city council and the validation of externally sourced data and information. The study also investigated the challenges encountered during the utilisation of organisational knowledge and the opportunities and suggestions for improving the utilisation of knowledge by the city council. The following questions were posed to the interviewees concerning knowledge utilisation:

KU1. How does the city council make use of technology to enable:

KU1.1. The application of the available technical knowledge?

KU1.2. The validation of externally sourced information for usability by the city council employees?

The results of the data collected from the questions are presented in the following sections.

##### 5.4.1. Application of the Available Technical Knowledge

Concerning technical knowledge, it mostly resided in the minds of the personnel carrying out technical duties such as installation and maintenance of service infrastructure. Mostly, service personnel would respond to issues raised by residents, such as water and sewer reticulation pipe bursts.

*Speaker 001: (In the case of) sewer bursts residents have been actually given the WhatsApp platform the sewer rodders so that if they see any sewer flowing, the guy can actually just give a ring that, "at that place, there is a sewer burst can you please attend".*

*Speaker 001: Yes, it is logged!*

*Speaker 001: Our problem is that we only have one group of sewer rodders, and there is one book which is used for logging! The logging is done manually, and the...the...the group always come and collect those loggings to go and attend to them. There is one person who is only entitled to resolve those problems, so there is no need for allocating because he is the only one who takes that... attends to all the problems with his group...*

*Speaker 001: manually*

*Speaker 002: It used to be two because usually, the systems admins for the whole cities of the whole Zimbabwe would gather the look on the new things that are on the market for IT so usually (that is for the systems) for the systems admin.*

*Speaker 002: No (other specialist systems). Not that I know of*

##### 5.4.2. Validation of Externally Sourced Information for Usability by the City Council Employees

In terms of validating information from outside sources, particularly regarding client payments, one interviewee indicated the need to confirm with the bank once a client indicated making a payment into the city council's bank account. The confirmation involved obtaining a bank statement and physically checking if the clients' deposit was indicated.

*Speaker 001: Yes, they supply us if they have made any payments, they can they would actually use our e-mails to actually communicate to us that we have paid so much so much can you check*

*Speaker 001: Yes, actually their communication would actually authenticate what is in the bank, on the bank statement. It will actually communicate that this deposit is for so and so, for that account.*

Another interviewee indicated that after capturing meter readings into the system, including those supplied by the clients, a meter reading exception report is produced, which is used to validate the data entered into the system. The report helps the employees to identify readings with a greater deviation from the calculated average to investigate possible anomalies in meter readings.

**Speaker 002:** *usually, when they take the readings, they come with them in the office then I do the capturing. After capturing, I run a report that will validate... we call it a meter reading exception report. Then it will show because usually, you specify the period like if you want to validate for six months [unintelligible 00:22:59]. When you run that report, it will show the actual consumption against the average for those six months, so you can easily pick the anomaly or... then, if need be, you go on site.*

**Speaker 002:** *usually, when they send that information, we just capture, but when we do the exception report because usually, we would have to capture the information, then you run that report then in that report you can see the anomalies then you correct. If you need to visit the area, then you have to go again and visit that place to make clarifications.*

Another interviewee, however, indicated that there was no way of validating data that they were aware of, and the data readings are entered into the PROMUN system as received from the meter readers and the clients.

**Speaker 003:** *There is no any way (of validating that information to make sure that it is free of errors and it is correct.)*

**Speaker 003:** *(It is captured) as it is.*

## 5.5. Organisational Learning

Concerning organisational learning, the study sought to investigate the application of the available technical knowledge within the city council and the validation of externally sourced data and information. The study also investigated the challenges encountered during the utilisation of organisational knowledge and the opportunities and suggestions for improving the utilisation of knowledge by the city council. The following questions were posed to the interviewees concerning organisational learning:

OL1. How does the city council use technology to update its existing knowledge based on:

OL1.1. Lessons learnt?

OL1.2. Best practices?

OL2. How does the city council use technology to share:

OL2.1. Experiences between individuals and departments?

OL2.2. Best practices between individuals and departments?

The results of the data collected from the questions are presented in the following sections.

### 5.5.1. Technology Use to Update Existing Knowledge Based on Best Practices

All the interviewees indicated that the city council does not use any technology in updating the organisation's knowledge based on best practices. The indications were also that no best practices were being followed, particularly in the IT section.

**Speaker 001:** *At the moment, there is no benchmark. As long as you can meet what is required in time. There is no benchmark on best practices.*

**Speaker 002:** *Haa, so far it depends with the department, but as for the IT, there is no best practices.*

**Speaker 003:** *Best practices; they do not change.*

### 5.5.2. Technology Use to Update Existing Knowledge Based on Lessons Learned

All the interviewees indicated that the city council does not use any technology in updating the organisation's knowledge based on lessons learnt. However, all interviewees noted that most employees manually diarise challenges and lessons learnt.

**Speaker 001:** *At the moment, I cannot say yes. Because when we have challenges, we address them as they come. And when we address (a problem), we think we have done our best we don't keep them anywhere [Laughter] ... When we have a challenge, we have somewhere where we log our problems and how it has been solved we can actually write in our diaries. It is diarised manually.*

**Speaker 002:** *Usually they diarise like or even like what we said on the people who are retiring. Just diarise so if we need (it).*

**Speaker 003:** *Yes, they usually log it in diaries, but there is no system for doing it.*

One interviewee, however, noted that the owner kept the diarised information which was not subsequently shared with other employees in the organisation.

**Speaker 002:** *Because normally it will be meant for the person who will be using that (information). So he has to look for that information; if he has let something through, then*

he has to capitalise if maybe something happens like the same thing, so he has to use the past experience as the main thing to solve that issue. But usually, people just diarise (it)...Yes, it won't be shared unless requested [Laughter].

### 5.5.3. Technology Usage to Share Best Practices between Individuals and Departments

In terms of technology usage for best practices between individuals and departments in the city council, the interviewees indicated that nothing was going on in that regard.

*Speaker 001: At the moment, we do not have any.*

*Speaker 002: (nothing)*

One interviewee indicated that best practices, in the cases they were shared, were only shared orally, but there was no resultant implementation or improvement in the processes.

*Speaker 003: Usually, it is just oral. They just talk about it, but the implementation of change is really difficult because the format that you have to use for whatever improvement that you get is really hard.*

### 5.5.4. Technology Usage to Share Experiences between Individuals and Departments

In terms of technology usage for sharing experiences between individuals and departments in the city council, the interviewees mentioned using telephones and WhatsApp.

*Speaker 001: At the moment, we are using phones and WhatsApp.*

*Speaker 003: Yes, They call. They use the telephone, they explain the problem, and he (the Systems Administrator) gives them the solution if there is any*

One interviewee, however, was of the view that most of the employees' experiences were individual, hence not shared. The interviewee also noted that there was no central authority responsible for coordinating the sharing of experiences between individuals and departments in the city council.

*Speaker 002: (In terms of) the experiences since most of them are individual (Laughter) we have got nobody ... so it won't be shared*

### 5.5.5. Technology Use to Improve the Process of Acquiring, Capturing and Disseminating New Knowledge to other Organisational Members

In terms of using technology to improve the process of acquiring, capturing and disseminating new knowledge to other organisational members, one interviewee indicated the use of WhatsApp as the predominant means of sharing.

*Speaker 001: Using technology, we normally use WhatsApp. He can actually give what he has brought from somewhere, just attach and feed into the group, and people can actually look, "Oh, this is what's happening somewhere!"*

Another interviewee reiterated the need for the city council to develop a functional website where they could interact and get suggestions from residents and stakeholders.

*Speaker 003: I think we should actually develop a functional website where we can post in terms of disseminating our information where our residents can actually post also their complaints or suggestions for improvement as well.*

## 6. Discussion

The foremost aim of the interviews was to ascertain the current level of information technology use for knowledge management in Zimbabwean urban district councils. The interviewees generally indicated that the city council's IT infrastructure was inadequate for most of the processes required in the city council. The interviewees indicated that inasmuch as the various KM processes (capture, sharing, and utilisation) were being undertaken in the city council, most of them were manual, and the utilisation of technology was at a bare minimum. These mirrored findings by Muyambo and Klaassen (2015), who observed that most urban councils did not fully utilise available systems owing to insufficient training and restricted use of ICT systems for management.

The interviews also divulged that the level of learning within the city council was low, particularly regarding information technology. The main mode of exchange in the organisation was e-mail, but not all employees had access since the organisational e-mail was not functional. At the time of the interviews, the city council did not have a functional website, thus hampering the city's efforts to share information with stakeholders and clients. The city council was also using more than one system, and there was no interoperability between the systems, thus creating data redundancy and inconsistencies.

### 6.1. Knowledge Capture

Table 2 summarises the IT department interview outcomes about the current knowledge capture process. The interview focused on the type of data collected from the residents, the technology utilised in the data capture process, challenges faced, and suggested improvements on the data capture process.

**Table 2:** Summary of the current state of knowledge capture

KM Factor	Outcomes
Data capture	Customer details – Name, surname – Identification number – House number – Water meter number Contact details – Postal address – E-mail address – Phone number Monthly billing Information
Technology	<ul style="list-style-type: none"> <li>• Meter reading cards (manual)</li> <li>• MFMS (PROMUN)</li> </ul>

Becerra-Fernandez and Sabherwal (2010) identified several useful technologies for capturing knowledge, including Expert systems, chat groups, best practices, and databases for lessons learned, computer-mediated communication, AI-based knowledge acquisition, and computer-based models.

### 6.2. Knowledge Sharing

Concerning knowledge sharing, the interview focused on the type of information exchanges internally and externally, the knowledge sharing technologies, challenges faced in sharing knowledge and suggested improvement to the knowledge sharing process. Table 3 summarises the IT department interview outcomes concerning the current knowledge capture process.

**Table 3:** Summary of the current state of knowledge sharing

KM Factor	Outcomes
Type of information exchange	With residents – account balances, billing information and transaction histories – tariff updates, water and other service interruptions With external stakeholders – aged analysis reports – residential stand information – road closure notifications With employees – memos, documents, pay slips and their account balances for services rendered
Knowledge sharing technologies	<ul style="list-style-type: none"> <li>• Minimal technology utilisation</li> <li>• No website</li> <li>• Newsletter</li> <li>• WhatsApp platforms (not official)</li> <li>• E-mail</li> <li>• Telephone</li> </ul>

Becerra-Fernandez and Sabherwal (2010) identified varied technologies for sharing knowledge. These include video conferencing, online discussion groups, electronic mail, group collaboration tools, web-based access to data, databases, information repositories, databases for best

practices, lessons learnt systems and expertise locator systems.

### 6.3. Knowledge Utilisation

Concerning knowledge utilisation, the study sought to explore the application of the available technical knowledge within the city council alongside validating externally sourced data and information. The study also investigated the challenges encountered during the utilisation of organisational knowledge and the opportunities and suggestions for improving the utilisation of knowledge by the city council. Table 4 gives a summary of the interview outcomes concerning knowledge utilisation.

**Table 4:** Summary of the current state of knowledge utilisation

KM Factor	Outcomes
Application of available technical knowledge	<ul style="list-style-type: none"> <li>• Solution manually logged;</li> <li>• No database for best practices</li> <li>• Use of WhatsApp platforms</li> </ul>
Validation of externally sourced information	<ul style="list-style-type: none"> <li>• Manual validation of payments done through the bank</li> <li>• MFMS exception reports</li> <li>• Estimations</li> </ul>

According to Becerra-Fernandez and Sabherwal (2010), technologies for knowledge utilisation include systems that acquire and conveyance of “experts’ knowledge, troubleshooting systems, case-based reasoning systems, decision support systems, expert systems, enterprise resource planning systems and management information systems.”

### 6.4. Organisational Learning

Regarding organisational learning, the study sought to explore how learning was achieved in the organisation. The study explored the utilisation of technology in updating and sharing knowledge and the provision of IT systems training to employees. Insights on the challenges facing the organisation regarding organisational learning and possible improvements to the utilisation of technology for organisational learning were also sought. Table 5 gives a summary of the interview outcomes concerning organisational learning.

**Table 5:** Summary of the current state of organisational learning

KM Factor	Outcomes
Technology use to update existing knowledge based on Lessons learnt.	<ul style="list-style-type: none"> <li>• Use of personal diaries.</li> <li>• No technology involved</li> </ul>
Technology use to update existing knowledge based on Best practices	<ul style="list-style-type: none"> <li>• No technology involved</li> </ul>

Technology usage to share experiences between individuals and departments	<ul style="list-style-type: none"> <li>• Telephones, WhatsApp</li> <li>• No formal platform for sharing experiences</li> </ul>
Technology usage to share Best practices between individuals and departments.	<ul style="list-style-type: none"> <li>• No technology involved</li> </ul>

## 7. Conclusions

The study generally indicated that Masvingo City Council's ICT infrastructure was insufficient for most of the processes required in the city council. The interviewees indicated that inasmuch as the various KM processes (capture, sharing, and utilisation) were being undertaken in the city council, most of them were manual, and the utilisation of technology was at a bare minimum. This mirrored findings by Muyambo and Klaassen (2015), who observed that most urban councils did not fully utilise available systems owing to insufficient training and restricted use of ICT systems for management. Masa'deh (2016) further claims that, by embracing numerous technology platforms, technology infrastructure plays a crucial role in an organisation's knowledge management system in terms of developing and utilising new information, as well as sharing current knowledge. Lakhwani, Dastane, Satar, and Johari (2020) further assert that employee productivity will be positively boosted and improved if an organisation's IT infrastructure is strong. The study also revealed that the level of learning within the city council was low, particularly looking at the information technology aspects. This can be attributed to the insufficiency of the IT infrastructure in the city council. This supports the assertion by Bin Alias and Goyal (2020) that there was a strong association between organisational learning and the degree of acquisition of IT infrastructure. At the time of the study, the city council did not have a functional website, thus hampering the city's efforts in sharing information with stakeholders and clients. The internet is becoming an increasingly significant route for gathering, exchanging, and disseminating information, as well as a platform for stakeholders to collaborate (Reychav & Wu, 2015).

This research adds to the body of knowledge in the Zimbabwean local government by providing the data needed to establish a foundation for future research, with a specific focus on knowledge management and information technology utilisation in municipal organisations. The study recommends that Masvingo City Council direct substantial resources towards improving the existing ICT infrastructure to improve service delivery. The study also recommends that the city council provide regular training to employees to utilise the available information and communication technologies in mana-

ging the organisation's knowledge. The study also recommends that the IT personnel design and implement training programmes for the city council staff concerning the utilisation of ICTs. This will result in the improved utilisation of the existing technologies. This supports Olatoye's (2011) study, which found a substantial positive association between ICT training and usage, meaning that the greater the level of ICT training, the greater the level of ICT usage.

Concerning future research, the study recommends that practitioners investigate the factors that lead to a lack of support from the city council management regarding investing in information and communication technologies. In the academic sphere, the outcome of the study adds details related to the utilisation of technology for knowledge management in the context of developing countries as learning materials or as an indication of additional research. This research was part of a larger study; thus, it was mainly focused on the qualitative aspects of the research. There are thus some inherent methodological limitations with regard to the research sample and the selection of participants.

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