Knowledge Management as an Organisational Tool: The Case of the Electricity Supply Industry in Zimbabwe

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ABSTRACT

Countries no longer contest solely on monetary capital and strength for survival, sustainable growth, development and advancement, but rather on creation, accumulation and strategic use of cutting-edge knowledge. A winning knowledge management (KM) programme makes innovations feasible, enables better and faster decisions, and increases staff productivity, product and service quality and deliverable consistency by capitalising on intellectual and knowledge-based assets, thereby enhancing organisational performance. Eager to reap the benefits of KM, many organisations leap into a knowledge management solution; however, implementation of KM can be a challenge. The challenges emanate from failure to effectively incorporate and manage the crucial elements that determine the successful implementation of KM as an organisational tool that engages people, strategy, corporate culture and information technology.

This interpretive case study focuses on Zimbabwe's electricity supply industry, which is on the verge of losing knowledge from its experienced employees owing to employee retirement and employee mobility. The Zimbabwe Electricity Transmission and Distribution Company (ZETDC), a state-owned company, is accountable for transmitting electricity from power stations, distributing it and retailing it to end users. The recent revival of the economy in Zimbabwe has increased demand and there is much pressure on the power generation capacity of ZETDC to meet demand from the industry and private households. This pressure affects the ZETDC's operating model and therefore, organisational tools such as KM must be applied to manage its impact.

Secondary data was collected through a review of the relevant literature and questionnaires and semi-structured interviews in ZETDC. Data collected was analysed and the themes that emerged were reported on. The study found that the ZETDC might suffer knowledge drain because of lack of an adequate system and procedures to manage its knowledge assets. Therefore, a proper KM system and strategy are required to ensure that both tacit knowledge and explicit knowledge are effectively passed on to the remaining and future employees. Furthermore, the electricity supply industry must integrate, build and remodel its internal and external capabilities through KM activitives to improve application of KM as an organisational tool for enhancing performance in the fast-changing environment in which it operates.

Keywords: knowledge, knowledge management, electricity supply industry, dynamic capabilities, organisational performance

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DEDICATION

This research is dedicated to my mother, Martha Raviro Mhonderwa.

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ACRONYMS

APPA	**American Public Power Association**
DC	**Dynamic Capabilities**
EPRI	**Electric Power Research Institute**
HR	**Human Reources**
KM	**Knowledge Management**
LOs	**Learning Organisations**
ZESA	**Zimbabwe Electricity Supply Authority Holdings**
ZETDC	**Zimbabwe Electricity Transmission and Distribution Company**

1. INTRODUCTION

The world is currently very intricate, competitive and uncertain. Competitive advantage among nations has shifted radically from being labour- and capital- intensive in the agricultural and industrial age to knowledge in this information age (Hardia, 2013). Nations no longer vie exclusively for monetary capital and strength for survival, sustainable growth, development and advancement, but rather for creation, accumulation and strategic use of cutting-edge knowledge. Omotayo (2015:1) elaborates that the gross domestic product's growth rate depends on the "quantum and quality of knowledge stock harnessed and applied in the production process in sectors of the economy amid other factors."

Globalisation has resulted in the advent of knowledge-based organisations that place importance on managing human assets proficiently so that employees keep adding value to the economy (Hardia, 2013; Omotayo, 2015). Therefore, knowledge is critical for the success of any nation in this information era. The management of knowledge is valuable for all sections of the economy, such as the banking, education, telecommunications, production and public sectors. Organisations, including the energy sector, experience difficulties in capturing, storing, retaining and sharing knowledge.

One such sector on the verge of suffering from loss of knowledge and experience from employees because of an ageing workforce and employee mobility is the electricity supply industry in the energy sector in Zimbabwe. The electricity supply industry plays an important part in today's social, domestic and industrial sectors. Ong, Mahlia and Masjuki (2011) state that an abundant, constant and cost-effective supply of electricity is crucial for current economic development (Choy, 2005; Mohamed & Lee, 2006). The electricity supply industry constitutes a great part of the economy, therefore it cannot not be side-lined from adopting knowledge management (KM) and enjoying the benefits it brings. The study focused on the Zimbabwe Electricity Transmission and Distribution Company (ZETDC), a subsidiary of the Zimbabwe Electricity Supply Authority (ZESA) Holdings Private Limited. ZESA Holdings falls under the Ministry of Energy and Power

Development. ZETDC is liable for transmitting electricity from power stations, distributing it and retailing it to end users (ZETDC, 2016).

The Minister of Energy in Zimbabwe, Advocate Chasi, has emphasised that electricity is vital for the economy and should be "led by women and men (in that order) of skill and integrity and experience" (Techzim, 2019:1). ZETDC relies on past knowledge and experience for its management and operations, hence the loss of knowledge and experience from retirees and employee mobility hampers its potential to innovate. Knowledge and experience of staff and experts must be transmitted to the next generations to prevent knowledge loss and reduce the high risk of making errors. Since ZESA is a state-owned company without competitors, any staff movement or retirement results in a threatening knowledge drain, as experienced people are very scarce in the market (Ramanigopal, 2012). Ramanigopal (2012) explains that KM provides a solution to meet the intellectual loss as a result of employee retirement and employee mobility. It is consequently imperative for ZETDC to manage all its knowledge effectively.

Therefore, this study considers the current KM, strategies, processes and technologies used at ZETDC and suggests ways to improve the implementation of KM as an organisational tool in support of improved organisational performance.

1.1 BACKGROUND INFORMATION

Knowledge is "facts, information, and skills acquired through experience or education" (Satayadas, Harigopal & Cassaigne, 2001:430). Polanyi (1967) and Nonaka (1994) concur that two types of knowledge exist, namely tacit and explicit. The first, also known as implicit knowledge, refers to "personal and context specific knowledge of a person that resides in the human mind, behavior and perception" (Duffy, 2000: 65). The fact that implicit knowledge is held within an individual makes it hard to formalise or communicate fully, hence it requires skill and practice, as it can only be transferred through interaction (Hislop, 2013). Baloh, Desouza and Paquette (2011:38) further explain that implicit knowledge is embedded in "values, action, ideals, procedures, commitment" and cannot be condensed to rules or retrieved directly.

On the contrary, explicit knowledge is "formal and systematic", thus it is "codified, collected, stored and disseminated" (Nonaka, 1994:17). Explicit knowledge can be verbalised, documented into books, manuals, white papers, scientific formulas and policy manuals among others, thus it can be captured and shared formally (Duffy, 2000). Unlike tacit knowledge, which is difficult to verbalise, most organisations find it easy to acquire, capture, audit, store and extract explicit knowledge. Baloh et al. (2011) state that an organisation should manage all the knowledge it owns and maximise its strategic value to succeed.

Knowledge management is defined "as the study of strategy, process and technology used to acquire, select, organize, share and leverage business critical information and expertise so as to improve company productivity decision quality" (Satayadas et al., 2001:431). Hoffman and Hanes (2003) state that it is vital to manage organisational knowledge because most of the knowledgeable employees in the electricity supply sector are reaching retirement age, while others are leaving the company for greener pastures. The Electric Power Research Institute (EPRI) (2005) and the American Public Power Association (APPA) conducted studies on KM in the electricity industry. These research projects focused mainly on the impact of the aging and retiring workforce on KM in the energy sector.

The studies highlighted above and other surveys that were conducted investigated general application of KM, but there seem to be gaps in literature regarding KM practices in specific sectors of the industry, such as the electricity supply sector. The electricity supply sector is the backbone of the economic development of nations. The electricity supply industry in Zimbabwe and Africa is experiencing high staff turnover. It is therefore imperative to investigate ways of achieving good organisational performance in the sector through the implementation of an effective KM system.

1.2 PURPOSE OF THE STUDY

The electricity supply industry in Zimbabwe is a knowledge-based organisation that depends significantly on its employees' knowledge and experience -to function in the ever-changing environment in which it operates. Any employee movements due to employee mobility or retirement consequently lead to knowledge drain. Therefore, the purpose of this study was to

suggest ways to apply KM successfully as an organisational tool to manage knowledge in the electricity supply industry for organisational performance enhancement. In order to propose ways to improve KM at ZETDC, the types of knowledge, as well as the KM system, tools and techniques currently utilised were identified and assessed. Furthermore, KM factors hampering the effectiveness of the current KM system were evaluated and the impact of current KM practices on organisational performance was established.

1.3 PROBLEM STATEMENT

The energy sector plays an important role in today's social, domestic and industrial sectors and its cost has a major effect on the performance of the economy. Therefore, the available energy resources must be exploited effectively with minimum incremental costs. Zimbabwe is among the countries ranked lowest in the Global Competitiveness Index, currently at position 124 out of 137. One of the problematic factors responsible for this is inadequate supply of infrastructure (Schwab, 2017-2018). The ZETDC, which is responsible for the electricity supply in Zimbabwe, constitutes a large part of the economy and its main goals are to minimise disruptions in power supply and to be the preferred supplier of electricity regionally and globally (ZETDC, 2016). The electricity supply industry is characterised by zero tolerance for errors because the equipment involved is highly valued and the industry relies heavily on the specialised knowledge of its employees.

The ZETDC is on the brink of losing knowledge from its knowledgeable staff and experts because many of its employees have reached retirement age, while others are leaving the company for greener pastures. The ZETDC is heavily dependent on past knowledge and experience for its operations, hence the need to capture the employees' experience-based knowledge for current and future use. The electricity supply industry has been facing challenges that include failure to pay its employees in 2014 because of financial constraints. Furthermore, it has failed to provide electricity to the nation as a whole and customers complain that the electricity rates it charges are high compared to regional rates (Mhlanga, 2016; Sengere, 2017; Zhangazha, 2016). Recently, the country was faced with massive load shedding (rolling electricity blackouts) and this affected its economy, as most companies rely on electricity for their operations (The Herald, 2019).

Because the ZETDC is a state-owned company without competitors, any staff movement or retirement will result in a threatening knowledge drain as experienced people are very scarce in the market. The loss of knowledge and experience from senior employees and specialists hampers the industry's potential to innovate, hence knowledge must be transmitted to subsequent generations through training to reduce the high risk of making errors. The ZETDC currently uses a manual KM system stored in a registry where employees log issues that arise on a daily basis and rotate among sections, working under different supervisors, so that they transfer knowledge.

Studies conducted by the EPRI (2005) and APPA focused mainly on the impact of the aging and retiring workforce on KM in the energy sector. The studies highlighted above and other surveys that were conducted investigated the general application of KM, but there seem to be gaps in literature regarding KM practices in specific sectors of industry, such as the electricity supply sector. In this day and age organisations no longer compete only on the basis of the capital and machinery they own; they also depend on the knowledge of their employees for their success. The HR Magazine (2009:1) claims that an organisation's competitive advantage relies heavily on its knowledge, thus "what it knows, how it uses what it knows and how fast it can know something new. It is consequently imperative for the ZETDC to manage all its knowledge effectively. Therefore, this research examined the current KM practices at ZETDC and established ways to improve the adoption of KM as an organisational tool to support the enhancement of organisational performance in the electricity supply industry in Zimbabwe.

1.4 RESEARCH QUESTIONS

According to Feldt (2010), a research question is an inquest that the research study seeks to answer. These questions are imperative and must be accurately and clearly defined because they are the focus of the research. Based on the background discussed, the research questions for this study are listed below.

1.4.1 MAIN QUESTION

How can KM be applied as an organisational tool in the electricity supply industry in Zimbabwe?

1.4.2 SUB-QUESTIONS

Based on the main research question, the following sub-questions have been defined:

- What are the different types of knowledge existing at ZETDC?
- What tools and techniques are used for KM at ZETDC?
- What are the enablers and inhibitors of successful KM at ZETDC?
- How can ZETDC achieve the benefits of KM?

1.5 RESEARCH OBJECTIVES

The objectives of a research project summarise what is to be achieved by the study. The specific accomplishments the researcher seeks to attain by this study include:

- Identify and evaluate the types of knowledge used at ZETDC.
- Identify and evaluate the effectiveness of current KM, tools, techniques, practices and processes at ZETDC.
- Identify the factors of KM inhibiting the efficacy of KM system at ZETDC.
- Determine the impact of current KM practices on organisational performance.

1.6 RESEARCH APPROACH

A research strategy refers "to a general plan which aids the researcher in responding to the research questions in a systematic way" (Saunders, Lewis & Thornhill, 2007:85). A case study is "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidence are used" (Yin, 1984:62). Since this study focused solely on the electricity supply industry, the case study research strategy was more applicable because it aided in gaining a comprehensive understanding of KM in this industry. The interpretive paradigm was also used.

The researcher used semi-structured interviews and questionnaires as primary data collection methods in this research. A sample was gathered from ZETDC's critical business units for the semi structured interviews and questionnaires. A non-probability sampling method was used to select participants. This study involved participation from various individuals hence, it was important to address their privacy concerns through specifying ethical considerations. Participants were informed of the purpose of the research and asked to sign a written consent form to show that they had agreed to participate. The participants' identities and responses were kept private and confidential. Data gathered from semi-structured interviews and questionnaires was analysed using thematic analysis. Themes were constructed from analysing the collected data to answer the central research question and sub-questions. The contributions of this study were discussed and the conclusions as well as areas for future research were outlined.

1.7 ASSUMPTIONS

Leedy and Ormrod (2010:62) postulated that assumptions are so "basic that, without them, the research problem itself could not exist". Simon (2011) further elaborates that assumptions in research concern things that are out of the researcher's control, nevertheless, if they disappear one's study would become irrelevant. The assumptions discussed below were identified as critical to the research study.

All the respondents selected for semi-structured interviews and questionnaires took part in the survey and were truly representative of the whole population of the ZETDC. The researcher was given ample time to meet and conduct structured interviews with the executives, as well as hand out questionnaires to employees to fill in. The respondents answered the questions truthfully, the results were a true reflection of the organisation and appropriate solutions were identified. The researcher was given access to the organisation's repositories, which were valid and reliable. Lastly, it was assumed that the statutory guidelines and the economic environment remained the same during the period of carrying out research.

1.8 LIMITATIONS

Denscombe (2010) defines limitations as shortcomings, conditions or influences that cannot be controlled by the researcher and that place restrictions on the methodology and conclusions. This research only focused on one area in the energy sector, namely the electricity supply industry. Studies were done in one region in one province. The study focused on one subsidiary, namely ZETDC of ZESA Holdings. Therefore, the results of this study may not be applicable to other areas of the energy sector, as the focus was on the electricity supply industry. While it can offer important insights into other areas in the energy sector or subsidiaries of ZESA holdings, such conclusions should be approached with care, given the variations in the way the areas of the energy sector and other subsidiaries of ZESA Holdings operate.

To improve this, it may be important to replicate this study in other areas of the energy sector or other subsidiaries of ZESA Holdings. The researcher was likely to face challenges in accessing published secondary data on the organisations concerned, which would be regarded as confidential for national security reasons for institutions such as ZESA and its subsidiaries. In order to address these issues, authorisation had to be sought from the relevant authorities to be allowed to carry out the research and promises of not compromising confidentiality had to be made.

1.9 BRIEF CHAPTER OVERVIEW

This chapter focused mainly on introducing the study research in particular. A brief background of the study was also highlighted, with an overview of the challenges being faced by the sole electricity provider as a result of losing critical knowledge owing to employee retirements and mobility. Research questions, research objectives, the research approach, assumptions and limitations were explored in this chapter.

Knowledge and the types of knowledge namely implicit and tacit were analysed in *Chapter two*. Knowledge management and its crucial components were discussed in detail. This chapter further investigated KM in an organisational context by looking at learning organisations (LOs), knowledge workers (KWs) and dynamic capabilities (DC) theory. Integration of KM processes and DC, as well as the critical elements known as KM enablers, which determine the success of an

organisation in implementing KM, were also examined. Lastly, the strengths and weaknesses of KM were scrutinised.

Chapter three delved into the research methodology. The chapter started with a discussion of the research paradigm and research strategy. Data collection methods as well as the way in which the data was analysed were explored. The target population of the study were employees from the main business units who have knowledge that is critical for the running of ZETDC. A sampling method was used to select participants from the target population to participate in the semi-structured interviews and answer the questionnaires. Ethics considerations were outlined to ensure that people would be at ease when giving out information, knowing their identities would be kept private and confidential.

The findings from data collection were presented using tables and graphs, analysed and interpreted for meaning and implications in *Chapter four*. The researcher acknowledged that data gathered from interviews could not easily be quantified, therefore the analysis focused on data collected from questionnaires and the findings from interviews were meant to augment the questionnaire findings. Responses from semi-structured interviews and questionnaires were analysed using thematic analysis.

Chapter five followed, with a detailed analysis and discussion of the findings presented in Chapter four.

The contribution from this study, implications for KM as an organisational tool, recommendations and future research were discussed in *Chapter six.*

2 LITERATURE REVIEW

2.1 INTRODUCTION

The affirmation "Knowledge is power" made by Francis Bacon in 1597 is still true in the 21st century, because the success of any organisation in the private or public sector is heavily dependent on its aptitude to administer and transfer knowledge among its employees (Bacon, 1597:1). Choy (2005) asserts that an affordable, stable and reliable supply of electricity is the driving force for economic development (Mohamed & Lee, 2006; Ong et al., 2011). The electricity supply industry plays a vital part in Zimbabwe's economic growth and sustainable development because it is the main form of energy used. Knowledge is the most critical success factor for knowledge-based organisations in this rapidly changing environment, thus it should be handled and utilised effectively and efficiently to generate a sustainable competitive advantage for the organisation. Consequently, for strategic and operational purposes, it is critical for ZETDC to produce, capture, share and employ quality knowledge. Knowledge, KM and the components of KM, KM processes, KM enablers and inhibitors are explored in this chapter. In addition, KWs, LOs and DC along with the integration of KM and DC are explored.

2.2 KNOWLEDGE

According to Paschek, Ivascu and Draghici (2018:3), as shown in Figure 1, data entails facts and figures that have to be contextualised, categorised, calculated and condensed to become information. On the other hand knowledge, as explained by Cong and Pandya (2003:25), is "neither data nor information but rather an understanding one acquires from experience, reasoning, intuition and learning" (Davenport & Prusak, 1998:50). Therefore, knowledge stems from the understanding of information, whereas information entails assigning meaning to data. Figure 1 illustrates the difference between data, information and knowledge.

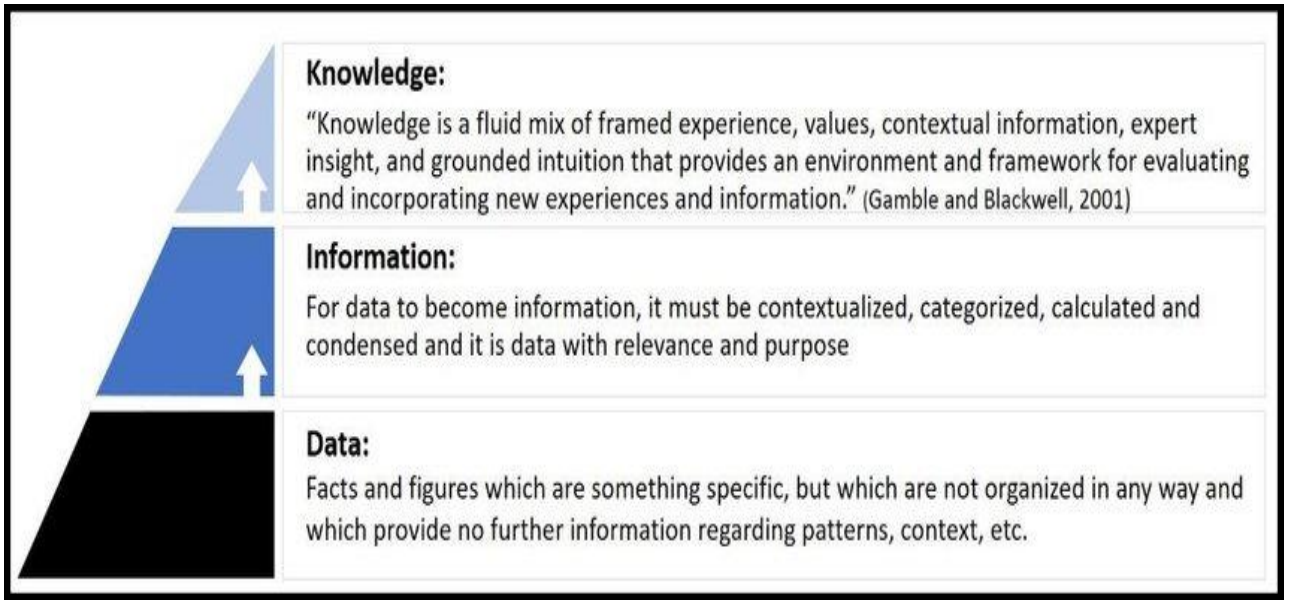


Figure 1: Definitions of data, information and knowledge (adapted from Paschek et al., 2018:3)

Knowledge can be shared to expand other people's knowledge or people can combine their knowledge with that of others to create new knowledge. Blackler (1995:1025) states that knowledge is "embodied, embedded, embrained, encultured and encoded" in individuals. Embodied knowledge refers to the knowledge one acquires from training the body to accomplish an assignment (Hislop, 2013; Yakhlef, 2010). Knowledge found in systems or common tasks is known as embedded knowledge, while knowledge gained from experience over time that individuals possess but find difficult to share or express is called embrained knowledge (Strati, 2007; Yakhlef, 2010). Encultured knowledge refers to the knowledge shared among individuals who work in a similar environment or have similar values and beliefs (Hislop, 2013).

Lastly, encoded knowledge is knowledge that is easily transferred to other people such as recipes or guidelines (Strati, 2007). Polanyi (1967) and Nonaka (1994) concur that two kinds of knowledge exist, namely explicit and tacit knowledge. Tacit knowledge is defined as "personal and context-specific knowledge of a person that resides in the human mind, behaviour, and perception" (Duffy, 2000:66). Tacit knowledge is apprehended within individuals, hence it is hard to formalise or communicate fully. It can only be transferred through interaction and requires skill and practice (Hislop, 2013). Baloh et al. (2011) further explain that tacit knowledge cannot be condensed to rules or accessed directly because it is embedded in action, procedures, commitment, ideals and values.

Since tacit knowledge is difficult to share across the enterprise, organisations should ensure that sections with high turnover convert key knowledge and experience from tacit to explicit knowledge. This helps pass institutional knowledge to both remaining and new personnel.

In contrast, explicit knowledge is logical and formal because it is "codified, collected, stored, and disseminated" (Nonaka, 1994:15). Explicit knowledge is recorded and shared effortlessly because it is verbalised, documented into books, manuals, white papers, scientific formulas and policy manuals, among others, and shared formally (Duffy, 2000). Unlike tacit knowledge, which is difficult to verbalise, most organisations find it easy to acquire, capture, audit, store and extract explicit knowledge. Therefore, tacit knowledge is the type that is embodied and embrained in people, while explicit knowledge is encultured among employees, embedded in routine tasks and encoded in manuals, guidelines and procedures. Table 1 shows a summary of the differences between explicit and tacit knowledge.

Table 1: Difference between explicit and tacit knowledge (adapted from Goffin, Koners, Baxter and Hoven, 2010:41)

	EXPLICIT KNOWLEDGE	**TACIT KNOWLEDGE**
Nature	➢ Easily identifiable ➢ Relatively easy to share ➢ Intrinsically incomplete: lacks context and requires interpretation	➢ Within-person knowledge ➢ Difficult to articulate ➢ Hard to share ➢ Can be shared only indirectly
Typical examples	➢ Information ➢ Know-what ➢ Theoretical knowledge	➢ Intuition and insight ➢ Practical intelligence skills and practice ➢ Know-how and heuristics ➢ Rules of thumb

		➢ Mental models and beliefs
Mechanisms for generating and sharing	➢ Codification ➢ Documentation ➢ Databases and search engines ➢ Blogs, wikis and intranets	➢ Practice ➢ Personal and team reflection ➢ Drawing mental maps ➢ Apprenticeships ➢ Social interaction and mentoring ➢ Story-telling and metaphors ➢ New codification systems can make some tacit knowledge easier to share through converting some elements of it into explicit knowledge

Although each type of knowledge has its downside, both are important for the successful running of any organisation. Drucker (1993) further postulates that knowledge is not merely a source of competitive advantage; it is the only source of competitive advantage, hence it should be managed effectively. Baloh et al. (2011) say that KM would not exist if there was no knowledge to manage. The next section explores KM in detail.

2.3 KNOWLEDGE MANAGEMENT

Knowledge management refers "to the strategies, processes and technologies used to acquire, select, organise, share and leverage an organisation's critical information and expertise with the aim of improving company productivity and decision quality" (Satayadas et al., 2001:15); it comprises people, knowledge, processes and technology. Additionally, Omotayo (2015) explains that KM uses people, processes and technology to manage knowledge effectively so as to attain a competitive advantage in knowledge-based economies.

According to Wiig (1993), KM in the electricity supply industry scrupulously captures and organises knowledge and experience obtained from its business partners and employees. This is done to embolden knowledge generation and learning, as well as ensuring that knowledge is readily

available to employees, while achieving the organisation's objectives. KM is critical for the survival and growth of any organisation, big or small, because it reduces loss of knowledge due to an aging workforce and employee mobility. Knowledge assets must be kept for use by the next generations in these work environments to create new knowledge and avoid repeating the same mistakes. Effective and efficient management of knowledge creates value for the organisation because it reduces the time and expenses of trial and error. Ramanigopal (2012) advises organisations to implement KM as a key strategy to manage competition globally and boost their proficiency in rapidly changing environments.

2.4 KEY COMPONENTS OF KNOWLEDGE MANAGEMENT

KM leverages knowledge by linking processes, people and technology. Therefore, the crucial elements of KM for an organisation's success are people, processes, knowledge and technology (Desouza, 2011; Edwards, 2009). Figure 2 shows the relationships between the key components of KM. People assist in the design and operation of processes and technology. Processes, on the other hand, delineate the functions and knowledge required by people and establish the need for technology. Lastly, technology creates opportunities for developing new processes and offers support to people in carrying out their day-to-day tasks. Each of these elements is discussed in detail below, except for knowledge, which was discussed above.

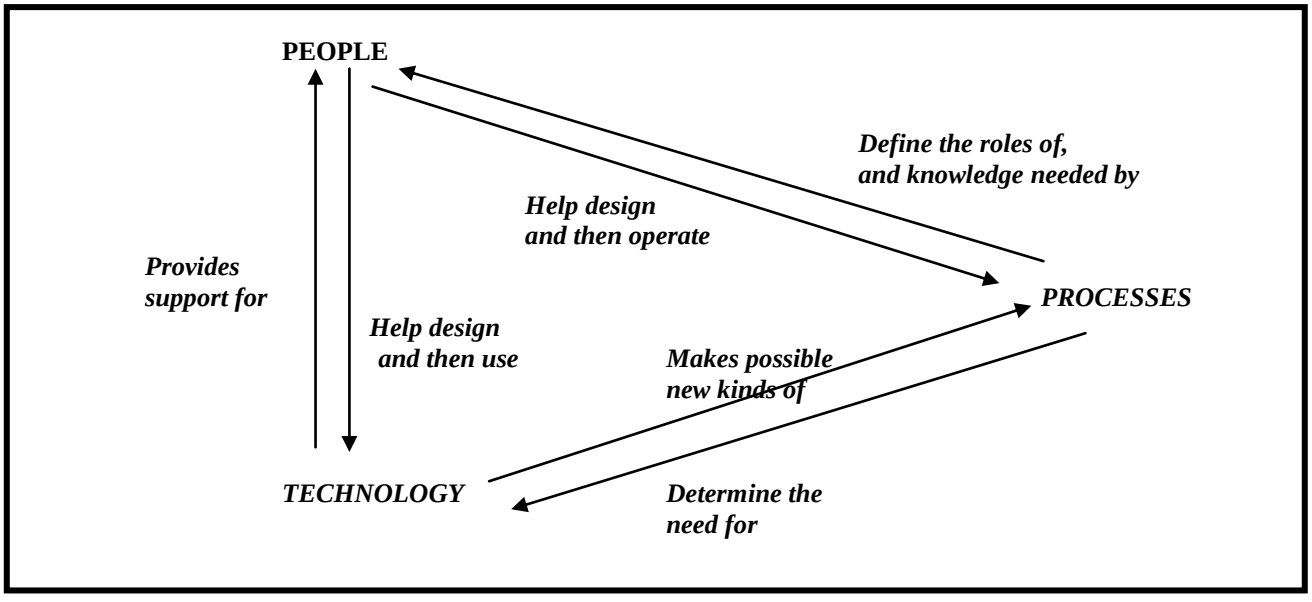


Figure 2: People, processes and technology (adapted from Edwards, 2009:472)

2.4.1 PEOPLE

People are described as "essential actors" in KM by the Socialisation Externalisation Combination Internalisation (SECI) framework, which explains the processes used in knowledge creation (Nonaka, 1994:16). People are both inventors and users of knowledge and their ability to think innovatively, combined with their talents and experience, makes them valuable sources of knowledge (Omotayo, 2015). As shown in Figure 2, people assist in designing and operating processes and technology.

Cong and Pandya (2003) state that employees' motivation, willingness, aptitude to distribute and utilise the knowledge of others are pertinent for the success of KM initiatives. Omotayo (2015) explains that people should be involved in KM strategy and implementation because KM revolves around them and they are the enablers of or barriers to effective KM. Since KM revolves around people, organisations must identify and remove the barriers. In addition, existing enablers should be improved and more new ones created.

Employees must look for knowledge, test it, learn and inform their counterparts of their innovations to expedite the creation of new knowledge (Drucker, 1999). Cong and Pandya (2003) points out that a knowledge-sharing culture must be created to reduce barriers to KM. Ways to reduce barriers to KM are discussed later in this chapter.

2.4.2 PROCESSES

Effectual KM relies on processes that augment individual and organisational aptitude, motivation and opportunities to learn, obtain knowledge and perform better so as to gain a competitive advantage (Argote, McEvily & Reagans, 2003). The processes shown in Figure 2 are not only KM practices, but include the business processes of the organisation concerned and they direct how work is performed in the organisation. Therefore, they should be managed effectively. The processes delineate the functions and knowledge required by people and establish the need for technology (Edwards, 2009). Figure 3 shows the KM processes that are explained below.

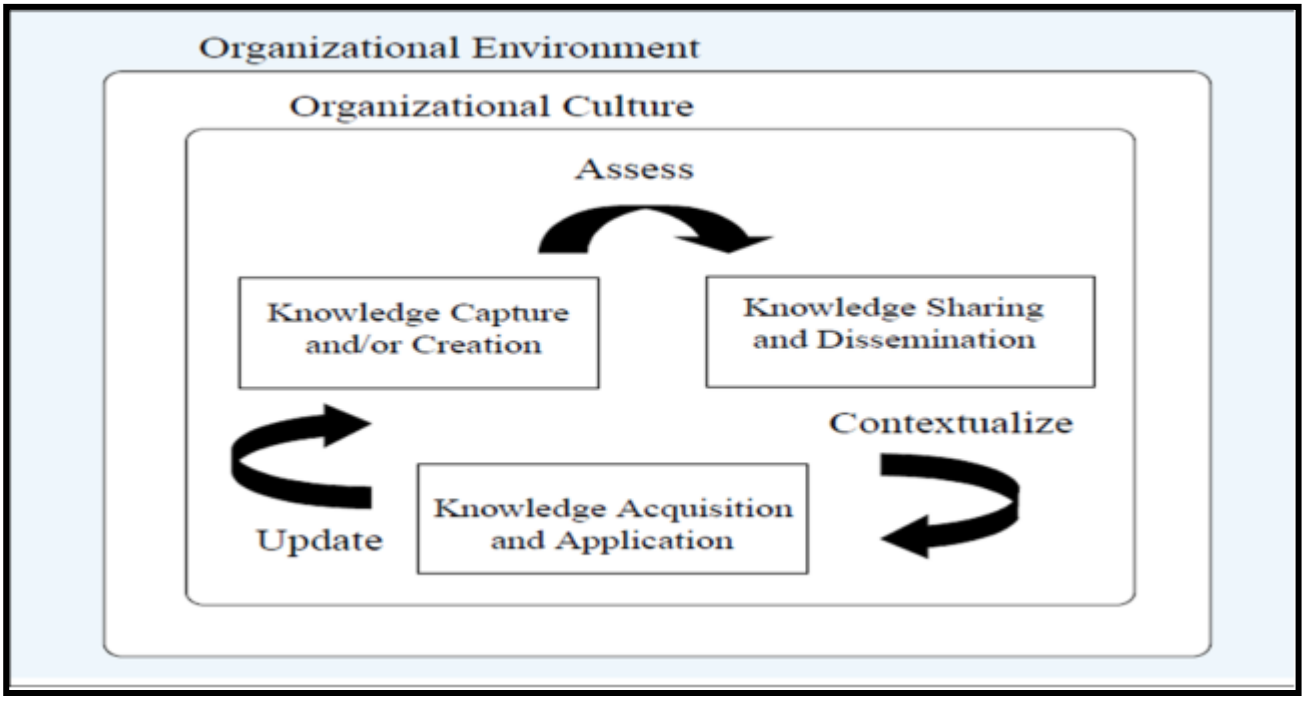


Figure 3: The knowledge management process (adapted from Mohapatra, Agrawal and Satpathy, 2016:73)

KM processes consist of three aspects namely knowledge capture and creation, knowledge sharing and dissemination, as well as knowledge acquisition and application as shown in Figure 3. The KM processes encompass conversion of knowledge from tacit to explicit or vice-versa. Mohapatra et al. (2016) say that the process is continuous and repeats itself, as illustrated in Figure 3. The knowledge created in an organisation is evaluated for relevance before it is shared.

Easterby, Smith and Lyles (2011) concur with Saidi (2015) that knowledge creation is an organisational, social and collaborative dynamic process of interaction between explicit and tacit knowledge that results in the creation of new knowledge. It involves codification of knowledge into forms that are appropriate for transmission. Mohapatra et al. (2016) define knowledge capturing as the identification and subsequent codification of existing internal knowledge and know-how in the organisation and external knowledge from the environment. This knowledge has usually previously been unnoticed. This combines existing knowledge and results in the production of new knowledge (Nielsen, 2006). Organisations that create knowledge on an ongoing basis develop a capability that underpins organisational learning, which is essential for gaining a competitive advantage.

Knowledge capturing entails evaluation of knowledge to ensure that relevant, reliable and valuable knowledge is captured. Knowledge capturing often results in moving knowledge from individual or group level to organisational level.

Nick and Stephanie (2014) encourage organisations to support learning and ensure that all employees have access to knowledge whenever they need it, regardless of their level in the organisation. When knowledge shared is contextualised in a manner that is acceptable to the user, the contextualised knowledge is updated, resulting in the creation of new knowledge. Knowledge sharing entails mutual exchange of tacit and explicit knowledge between individuals about products and procedures with the aim of creating new knowledge, along with expanding the utilisation value of the exchanged knowledge (Mohapatra et al., 2016).

Knowledge sharing plays a critical role in ensuring that knowledge is distributed to the focal unit/s in the organisation where it is needed most. This process enables the organisation to garner full competitive advantages from its investments in knowledge creation and capture (Argote & Ingram, 2000). However, in organisations where knowledge is regarded as power, it is difficult to establish mutuality. Lack of absorptive capacity of the recipient, causal vagueness regarding the knowledge itself and difficult rapport between the sender and the recipient are the core factors inhibiting knowledge sharing (Szulanski, 1996). Conversely, organisations can attain effectual knowledge sharing by creating an absorptive capacity and a corporate culture that supports knowledge sharing.

The performance and survival of any organisation in the long run relies on its ability to use its organisational capabilities to exploit its integrated knowledge resources. Knowledge created and shared within the organisation is then applied to enhance productivity (Easterby et al., 2011). Knowledge acquisition and application encompass the actual use of knowledge (Saidi, 2015; Nielsen, 2006). Knowledge is used in problem-solving, decision-making as well as developing competency maps to place people in teams and jobs that contribute to the overall performance of the organisation. The SECI framework, which shows spiral interaction involving tacit and explicit knowledge, was used to explain the knowledge creation and transfer process at all levels in an organisation (Nonaka, 1994). Figure 4 shows the SECI framework, which consist of four phases,

namely socialisation, externalisation, combination and internalisation. Each of these phases is discussed below.

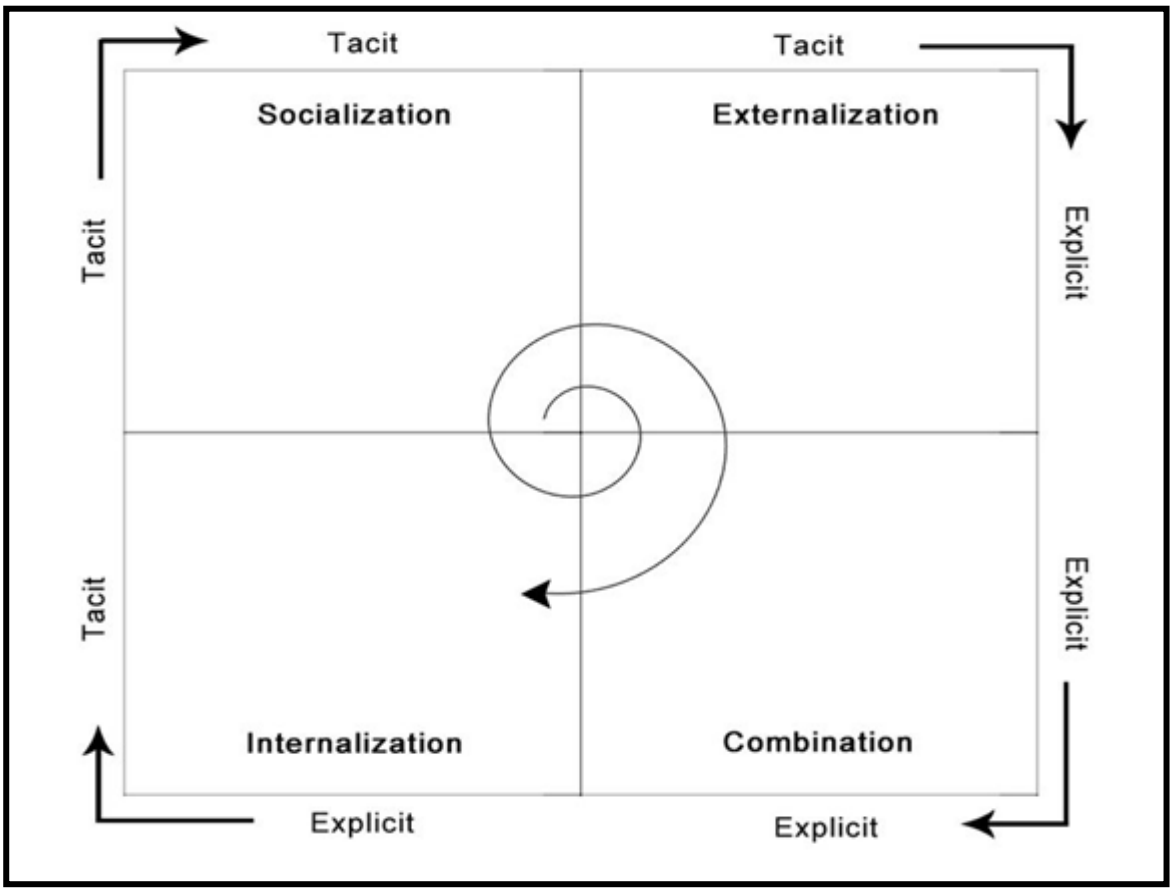


Figure 4: The Socialisation Externalisation Combination and Internalisation Model (adapted from Nonaka and Takeuchi, 1995:71)

Socialisation (tacit-to-tacit) encompasses the "sharing of tacit knowledge through face to face communication or shared experience such as apprenticeship programmes" (Nonaka & Konno, 1998:44). Examples of how socialisation takes place are face-to-face meetings, working in similar environments or "Management by walking around" (Nonaka & Konno, 1998:45; Posner, 2009). An employee shares knowledge directly with another employee/s and the latter learns the tacit skills by observing, imitating and practising. However, socialisation is a restricted way of creating knowledge because neither the trainee nor the trainer gains any insight into their craft knowledge. The knowledge obtained from socialisation does not become explicit, hence organisations find it difficult to leverage.

Externalisation (tacit-to-explicit) involves translating one's tacit knowledge to a form that others can comprehend and articulate (Nonaka & Konno, 1998). Nonaka and Konno (1998:49) elaborate that tacit knowledge is converted to explicit knowledge via "exchange mechanisms such as two-way dialogue, active listening and the visual depiction of ideas and concepts". Employees who are capable of articulating the foundations of their tacit knowledge can translate it into explicit knowledge, which can be shared with their counterparts. Posner (2009) states that new knowledge is formed when tacit knowledge and explicit knowledge interact and the knowledge transfer gap is best seen when externalisation takes place.

According to Nonaka and Konno (1998:50) combination (explicit-to-explicit transfer) takes place "when individuals or groups exchange and combine their different bodies of explicit knowledge through social interactions thereby amplifying the explicit knowledge." The two authors further explain that explicit-to-explicit knowledge transformation hinges on the following processes: "collecting and combining externalised knowledge; disseminating it, revising and reconceptualising the explicit knowledge to make it more usable and understandable" (Nonaka & Konno, 1998:50). Examples of combination are one-on-one interaction, web-based or audio dialogue, academic forums and research processes (Posner, 2009).

Lastly, internalisation (explicit-to-implicit transfer) takes place when the newly formed explicit knowledge is transformed into an organisation's tacit knowledge (Nonaka & Konno, 1998). Explicit knowledge must be "embodied in action and practice and internalised through learning by doing" (Nonaka & Konno, 1998:51). The instances of internalisation comprise "practicums, on the job training, simulations and experiments" (Posner, 2009:18).

2.4.3 TECHNOLOGY

According to Omatayo (2015), technology remains a crucial enabler and primary component of a knowledge management plan. The continuous developments in technology have led to the advent of technological solutions that can be used to accomplish KM. Figure 2 illustrates how technology creates opportunities for developing new processes and offers support to people in carrying out their day-to-day tasks. Information and communication technologies (ICTs) permit individuals and

groups in different geographic locations to collaborate. They also support KM activities related to the codification of knowledge and offer interactive forms of communication via the internet.

Although ICTs enable the implementation of KM, ICTs on their own are not the solution because they only expand the reach and scope of exchanging information among individuals or groups. Sun and Scott (2005) state that technologies do not make people share information; to achieve successful implementation of KM initiatives, it is necessary to address socio-cultural factors, such as trust, time or conflict, that hamper individuals' enthusiasm to disseminate knowledge. The next section focuses on the reasons why organisations need KM.

2.5 KNOWLEDGE MANAGEMENT IN AN ORGANISATIONAL CONTEXT

KM focuses on knowledge-related processes and management activities in organisations (Lee & Choi, 2003). Organisations no longer compete on the basis of financial resources or fixed assets they possess, but rather depend on their knowledge bases for survival and growth. Organisational survival, the effects of globalisation, an aging workforce, competition among organisations and organisational performance are all based on knowledge, therefore organisations should manage their knowledge effectively to function optimally (Desouza, 2011).

Organisations ought to make an effort to adopt KM systems that suit their distinctive features, unique resources and responsibilities. KM helps organisations "share valuable organisational insights to lessen redundant work, to avoid reinventing the wheel, to reduce training time for employees, to retain intellectual capital as employees' turnover in an organisation and to adapt to changing environments and markets" (Epetimehin & Ekundayo, 2011:20). Therefore, organisations that want to survive and remain competitive in this rapidly changing environment must implement effective KM systems.

Recent advances in technology call for organisations "to acquire, manage, share and exploit knowledge and information over numerous structural and cultural barriers" to enhance organisational performance (Desouza, 2011:10). Knowledge must be recorded for future use so that future generations do not repeat mistakes and reinvent knowledge (Omotayo, 2015). Effectively

managing knowledge can result in huge savings, noteworthy progress in human performance and a competitive advantage.

KM is important for competitive differentiation among organisations because it improves an organisation's ability to be innovative and thus distinguish itself from its rivals and attain a competitive advantage (Desouza, 2011). Therefore, an innovative organisation can secure and preserve its competitive position in the market-place. Organisations that are successful in creating an LO and have KWs have chances of surviving in today's ever-changing world. Consequently, LOs, KWs and DC are discussed in the following sections.

2.5.1 LEARNING ORGANISATIONS

According to Senge (1990:3) LOs are "organisations that allow people to incessantly expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free and where people are continually learning how to learn together." Watkins and Marsick (1993:8) defined an LO as "one that learns continuously and can transform itself". Therefore, LOs support a culture of continuous employee learning, critical thinking and risk-taking with new ideas to improve their operation. Senge (1990) postulated that organisations that are able to draw on people's commitment and capacity to learn at all levels will truly succeed in the future.

LOs provide organisations with the ability to transform through constant advancements based on learning from best practices and lessons learnt from mistakes (Martin, 2004). They are the foundation of organisational competence that can advance experiments, risk-taking, external environment relations and participative decision-making, which all result in improved organisational dialogue (Dimitriades, 2005). LOs, which permit employees to make mistakes and value their contributions (Martin, 2004), learn from experimenting and experience. Furthermore, the new knowledge is integrated into the daily activities so that it can be shared all over the organisation (Senge, 2006).

Developing LOs is an objective of KM, which motivates generating, distributing and applying knowledge, as well as aiding the organisation in entrenching knowledge into the processes of the

organisation to enhance its practices and behaviours and achieve its goals (Dimitriades, 2005). An organisation can enhance knowledge exploitation through LOs. Senge (2006) came up with five disciplines for LOs, namely "building a shared vision, system's thinking, mental models, team learning and personal mastery", as illustrated in Figure 5. The shared vision discipline answers the question, "What do we want to create together?" (Cropper, 2018:1). A shared vision permits personnel to contribute optimally to the organisation's success.

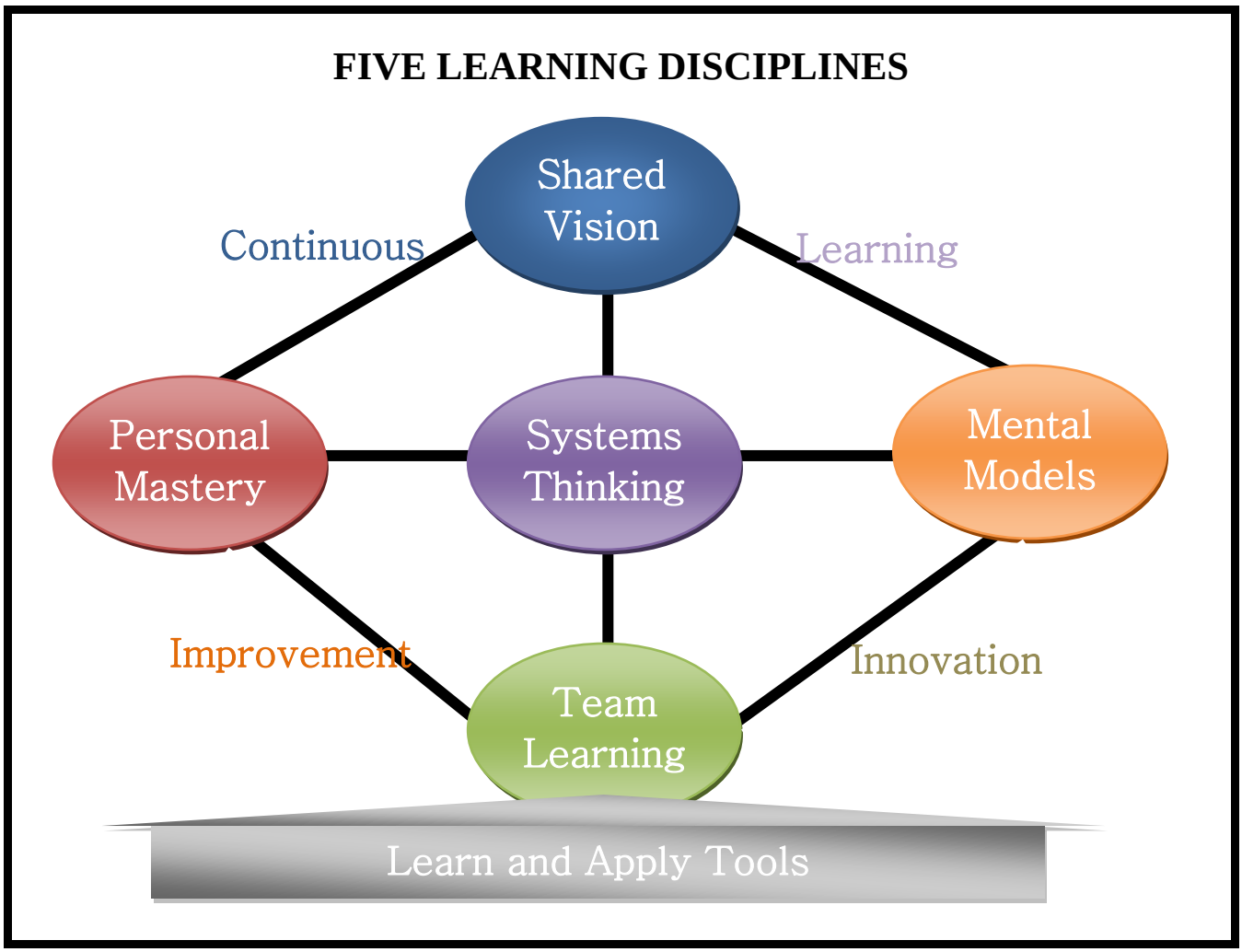


Figure 5: Five learning disciplines (adapted from Senge, 2006:60)

Senge (1990) concluded that having a clear shared vision creates mutual understanding and commitment, unbridles people's ambitions and expectations, as well as countering doubts and resistance. A clear vision enables employees to learn and succeed because they want to and not

because they are told to do it. The vision can be shared through interacting with the organisation's employees and using tools such as positive visioning, concept shifting and value alignment (Chinnam, 2017; Senge, 2006). On the other hand, systems' thinking reveals the observational process of the entire system, not individual issues (Senge, 2006). This discipline seeks to understand and address the whole by examining the interrelationships between parts.

Mental models are "deeply ingrained assumptions, images and generalizations that influence how people act and gives them the ability to reflect in and on actions" (Chinnam, 2017:1). They enable employees to identify and understand the values of the organisation as well as what the business entails. Mental models permit employees to understand correctly who they are and enable them to envision "where to go and how to develop further" (Senge, 2006:58). Team learning is the process of aligning and developing the capacities of a team to create results they truly desire to see (Chinnam, 2017:1). This discipline enables organisations to accomplish excellent functional team dynamics.

Team learning brings together personal mastery and shared vision. Organisations should ensure that employees' mistakes are forgiven and that they are allowed to experience a learning environment (Senge, 2006). Employees should view one another as team members not rivals. Personal mastery entails continuously clarifying and deepening one's personal vision through self-awareness. It is the human face of change. Personal mastery takes place when a person has a clear vision of a goal, combined with an accurate perception of reality (Senge, 2006).

Basadur and Gelade (2006) argue that KM and LOs enhance organisational effectiveness through grasping prospects that result in improved development of employees, novelty, social and organisational capital (Moffett, McAdam & Parkinson, 2003; Morales, Montesa & Joverb, 2007; Njuguna, 2009). LOs develop when KM in one area of the organisation is effectively transmitted to other areas employed in problem-solving or to give fresh and innovative insights (Goh, 2002; Grant, 1996). KM helps organisations ascertain their aptitude to "learn and adjust to the rapid changing global environment by setting up internal processes that aid in adapting learning and capital assets into desired outputs" (Grant, 1996:15; Harvey & Hider, 2004). Liao and Wu (2009:25) claim that

LOs slowly assist organisations set up "managerial commitment, systems perspective, openness and experimentation, knowledge transfer and integration". KWs are discussed in the next section.

2.5.2 KNOWLEDGE WORKERS

KWs are "high level workers who apply theoretical and analytical knowledge, acquired through formal training to develop products and services" (Drucker, 2011). Davenport (2005:50) defined KWs as people with "high degrees of expertise, education or experience whose primary job involves creating, distributing or applying knowledge". Unlike manual workers who use their hands to work, KWs use their brains and rely on their knowledge and aptitude to learn. KWs perform knowledge work, which entails transforming information from one form to another, frequently with intangible results.

Kokavcova and Mala (2009) stated that the most priceless knowledge of any organisation is in the heads of the employees. Drucker (1959) predicted that KWs would be the most precious asset of any organisation in the 21st century because of their creativity and productivity. KWs can be classified into "specialty knowledge workers, portable knowledge workers and creation of knowledge workers" (Emanoil, Alexandra & Mihaela, 2014). Specialty KWs have a noteworthy amount of knowledge connected to an organisation's specific products and services. Portable KWs have information of broad and instant value.

Lastly, KWs focus most of their efforts on inventive behaviour such as product design and development (Emanoil et al., 2014). KWs employ various methods and techniques to solve problems and "possess factual and theoretical knowledge, discover and access information, and have the ability to apply information, communication skills, motivation, trust and intellectual capabilities" (Kannan, Mohanta & Thooyamani, 2006:27).

KWs should be acquainted with precise factual and theoretical information, as knowledge is created on a continual basis. As knowledge is constantly growing and changing, KWs should independently find and access such information (Kannan et al., 2006). They should be able to exploit information and knowledge to respond to questions, resolve any predicaments and create new ideas. A KW

requires excellent communication skills to collaborate with others in setting goals, making decisions and generating ideas (Kannan et al., 2006).

Technological advancement obliges KWs to stay motivated in discovering and learning information and relating it to their jobs (Kannan et al., 2006). Trust influences KWs to share their knowledge with others. Lastly, KWs need to attain all the skills mentioned above, as well as intellectual capabilities to comprehend the importance of obtaining and preserving knowledge and skills essential to complete their tasks (Kannan et al., 2006). A discussion of the DC theory follows.

2.5.3 DYNAMIC CAPABILITIES THEORY

Eisenhardt and Martin (2000) point out that an organisation with DCs is not guaranteed to achieve organisational performance enhancement, but then again without dynamic capability it is impossible for firms to enhance organisational performance. Capabilities refer to "organisational skills, competencies and processes necessary to successfully utilise a firm's strategic resources" (Teece, 2007:1342). DCs are defined as "the ability to integrate, build and reconfigure internal and external competencies to address fast-changing environments" (Teece, Pisano & Sheun, 1997: 509).

DCs provide management with ways to transform the organisation's competencies, knowledge systems and culture to acclimatise with the ever-changing environment while guaranteeing organisational survival. They enable organisations to be innovative, create new markets, react to and cause market changes. Dynamic resources enable an organisation to fine-tune its resource mix to sustain its competitive advantage, which can erode rapidly. This theory uses a "process approach and acts as a buffer between an organisation's resources and the ever-changing environment" (Teece, et al., 1997:35).

The DCs theory presumes that an organisation's fundamental capabilities must be used to generate interim competitive positions, which can be expanded to lasting competitive advantage. Teece et al. (1997) suggest that for an organisation to meet new challenges, three DCs are indispensable and successful implementation of these capabilities result in corporate agility. Figure 6 shows the fundamentals of DCs that span three stages, namely sensing, seizing and transforming, which are also known as managing threats. These are discussed below.

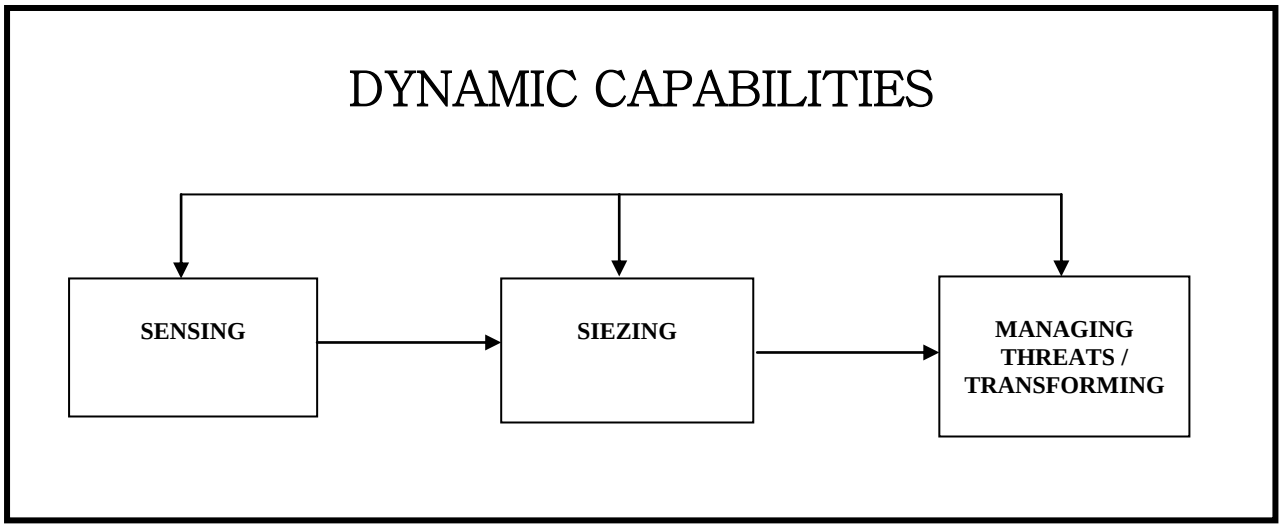


Figure 6: Fundamentals of dynamic capabilities (adapted from Teece, 2007:1342)

Sensing is inherently an entrepreneurial set of capabilities that entails identifying and assessing opportunities outside one's organisation (Teece et al., 1997). Furthermore, it delves into analytical systems and individual capabilities to learn, sense, filter, shape and calibrate opportunities. Sensing involves learning, which is the employees' aptitude to gain knowledge and create new strategic assets quickly. It requires managerial insight and vision (Teece, 2007). Furthermore, direct interaction with the environment results in the build-up of significant tacit knowledge based on existing beliefs, past experiences, context and sense of purpose.

Opportunities can be recognised and threats anticipated through exploring technological opportunities, doing systematic market research and listening to customers, along with scanning the other elements of the business ecosystem and informally through self-motivated reading of industry newspapers by employees (Helfat & Peteraf, 2015; Mesquita et al., 2017). An employee shares knowledge directly with another employee/s and the latter learns the tacit skills by observing, imitating and practising.

For the sensing capability to be effective, organisations should focus on enhancing "processes to direct internal research and development and select new technologies; processes to tap supplier and complementor innovation; processes to tap developments in exogenous science and technology as well as processes to identify target market segments, changing customer needs and customer innovation" (Kump, Engelmann, Schweiger & Kebler, 2016:7). Organisations with a high sensing

capacity are capable of unceasingly and consistently acquiring strategically significant information such as market trends, knowledge of competitors' activities and best practices from the environment.

Seizing refers to the development and selection of business opportunities suitable for the organisation's environment as well as its strengths and weaknesses (Teece, 2007). It entails the mobilisation of resources to elude threats successfully, exploit market needs along with opportunities and derive value from doing so (Teece, 2007; Kump et al., 2016). Furthermore, it links external and internal information as well as knowledge and is closely linked with strategic decision-making, particularly regarding investment decisions. The seizing capability commences with a strategy that enables the recognition of valuable knowledge. This evaluation is based on prior knowledge and it results in selection from a variety of strategic options.

Seizing entails integrating "new strategic assets with capability, technology and customer feedback into the organisational processes" (Teece et al., 1997:35). Seizing capabilities include designing business models to satisfy customers and capture value, as well as obtaining access to capital and the required human resources. Employee motivation is very important for the seizing capability, hence a good incentive design is indispensable. The organisation must also build strong external relationships with suppliers, complementors and customers (Mesquita et al., 2017).

Seizing capability encompasses outlining the customer solution and business model, choosing decision-making protocols, establishing enterprise boundaries to manage complements and control platforms, as well as building loyalty and commitment (Teece, 2007). Organisations with a high seizing capacity are able to decide whether some information is of potential value in transforming valuable information into concrete business opportunities that fit its strengths and weaknesses and to make decisions accordingly.

Teece (2007: 1335) described transforming as the "ability to recombine and reconfigure assets and organisational structures as the enterprise grows and as markets and technologies change." Transforming capability involves "enhancing, combining, protecting and reconfiguring an enterprise's tangible and intangible assets, governance, cospecialisation, knowledge management,

and decentralisation and near decomposability such that path dependencies and inertia are avoided" (Teece, 2007:1319). It entails incessant renewal or reuse of existing assets that have depreciated, as well as the reconfiguration of the organisation's asset structure to achieve swift internal and external change.

The capability to manage threats is necessary when radical new opportunities need to be addressed and intermittently to alleviate the inflexibility that builds up over time from asset accumulation, standard operating procedures and insider misappropriation of rent streams (Teece, 2007). The organisation's assets need to be retained in alignment to achieve the best strategic "fit" thus firm with ecosystem, structure with strategy and assets with one another (Mesquita et al., 2017:51). Complementarities must be managed constantly to attain evolutionary fitness thereby avoiding loss of value should market leverage shift to favour external complements (Teece, 2007).

Transforming is characterised by the actual realisation of strategic renewal within the organisation through the reconfiguration of resources, structures, and processes. Renewal only comes into being through implementation of new information and ideas in an organisation. An organisation with a high transforming capacity consistently implements renewal activities by assigning responsibilities, allocating resources and ensuring that the workforce possesses the newly required knowledge.

Employing DCs theory provides various opportunities, which include innovation, profitability, competitive advantage and operational performance (Wang, Senaratne & Rafiq, 2015; Wilden, Gudergan, Nielsen & Lings, 2013). DCs enable business enterprises to create, deploy and protect the intangible assets that support superior long-run business performance. Wade and Hulland (2004) declared that information systems resources are essential for the long-term competitiveness of any organisation that operates in unsteady environments because these aid in developing, adding, integrating and releasing other key resources over time. Barreto (2010) echoes that DCs signify an organisation's potential to solve its problems methodically through recognising environmental opportunities and threats, making market-oriented decisions in the appropriate time horizon and having the ability to transform its resource base.

Helfat (1997) proclaims that exploiting an organisation's knowledge assets improves its DCs and creates business value. While KM activities represent the activities involved in manipulating knowledge and changing the state of knowledge, DCs, as discussed above, are seen as integrated sets of KM activities that change, renew and exploit the knowledge-based resources of the organisation. Therefore, to gain and maintain a competitive advantage effectively as well as enhance performance in an ever-changing environment, organisations should integrate KM activities with their DCs. A discussion integrating KM and DCs follows.

2.6 INTEGRATION OF SECI AND DYNAMIC CAPABILITIES

DCs and KM phrases are used in deliberations on how best to manage organisations that operate in dynamic and intermittent environments to enhance organisational performance. The DCs theory explains why some organisations are more successful than others in creating a competitive advantage within dynamic markets (Eisenhardt & Martin, 2000; Teece et al., 1997). KM is regarded as a vital strategic initiative and the most significant guarantor of viable competitive advantage for organisations (Grant, 1996). While KM enquiry focuses on furnishing managers with solutions to create, preserve, transfer and use an organisation's explicit and tacit knowledge (Cepeda & Vera, 2007), DCs are perceived as integrated sets of KM processes responsible for changing, renewing and exploiting the organisation's knowledge-based resources (Nielsen, 2006).

Nonaka et al. (2011) emphasise that for any organisation to experience sturdy DCs, three capabilities namely sensing, seizing and transforming, should be present at the organisational level. Sensing entails gathering tacit knowledge through direct interactions with the environment because top management cannot sense all viable opportunities. Furthermore, the innovative facet of DCs requires that seizing and transforming occur organisationally, because it is challenging for top management to seize the sensed opportunities and transform organisational capabilities through asset transposition single-handedly. Figure 7 shows the three capabilities and micro-foundations of DCs.

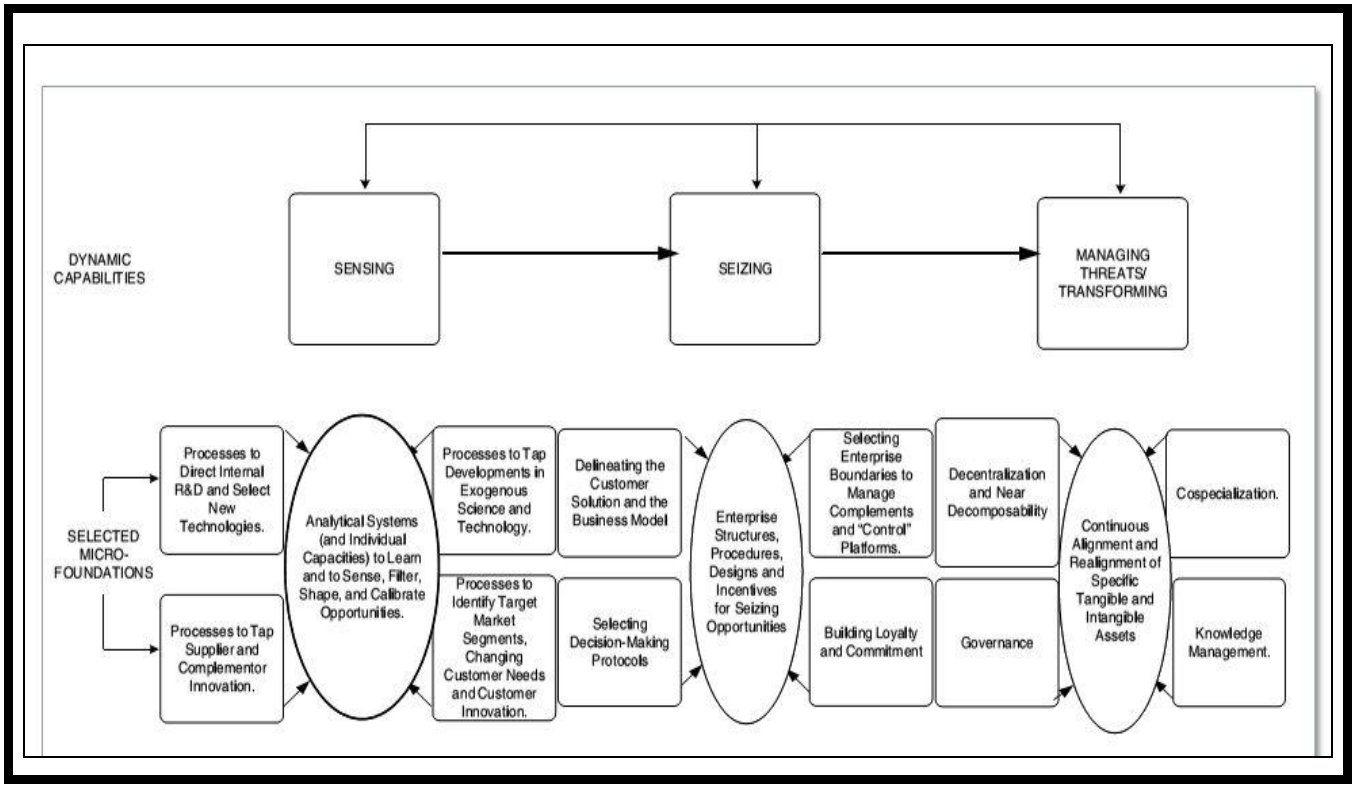


Figure 7:Fundamentals of dynamic capabilities (adapted from Teece, 2007:1342)

The micro-foundations of DCs encompass distinct skills, processes, procedures, organisational structures, decision rules and disciplines that undergird enterprise-level sensing, seizing and reconfiguring. These capacities are difficult to develop and deploy. Organisations with resilient DCs are strongly entrepreneurial and not only adapt to business ecosystems, but also shape them through innovation and collaboration with other enterprises, entities and institutions. The capabilities and micro-foundations of DCs were discussed in greater detail below.

Sensing refers to an organisation's capacity to scan the organisational environment continuously (Makkonen, Pohjola, Olkkonen & Koponen, 2014; Pavlou & Sawy, 2011; Teece, 2007). The sensing capability encompasses recognising opportunities and anticipating competitive threats formally through systematic market research or informally through self-motivated reading of industry newspapers by employees (Helfat & Peteraf, 2015). Sensing entails scanning, searching and exploring the environment across technologies, customer needs and markets both local and distant (March & Simon, 1958; Nelson & Winter, 1982). Babelytė-Labanauskė and Nedzinskas (2017) argue that sensing focuses not only on external aspects, but also on internal facets such as

the identification of new developments and opportunities within the organisation, thus creating knowledge.

Opportunities in organisations can be identified through differential access to existing information or created through new information and new knowledge, which can be exogenous or endogenous (Schumpeter, 1934; Kirzner, 1973). Opportunity creation and detection by individuals require both access to information and the ability to identify, sense and shape developments. However, the ability to identify opportunities particularly user needs in affiliation, with existing as well as novel solutions, hinges on either the individual's competences and extant knowledge or the knowledge and learning capacities of the organisation to which the individual belongs. Nonaka and Toyama (2007) state that opportunity creation and identification require specific knowledge, creative activity and the ability to understand customer decision-making and practical wisdom.

Sensing delves into analytical systems and individual capabilities to learn, sense, filter, shape and calibrate opportunities. Organisations should focus on processes to direct internal research and development and select new technologies, processes to tap supplier and complementor innovation, processes to tap developments in exogenous science and technology, as well as processes to identify target market segments, changing customer needs and customer innovation. Sensing encompasses probing and reprobing customer needs and technological prospects, as well as understanding latent demand, structural evolution of industries and markets, as well as probable supplier and competitor responses (Teece, 2007). Organisations can open up technological opportunities by engaging in research and development and tapping into the research output of others while simultaneously learning about customer needs. Changes in science and technology create opportunities for innovation. Investments in research and related activities are vital for sensing.

Sensing is rooted in direct interactions with the environment. In addition, direct interaction with the environment results in the building up of significant tacit knowledge based on existing beliefs, past experiences, context and sense of purpose. Direct interactions with actual business activities, customers, competitors and colleagues can be used to sense viable business opportunities and anticipate threats (Nonaka & Konno, 1998). Knowledge management enables sensing of technological opportunities in the marketplace, while organisational learning permits better

understanding of what knowledge is available, which helps determine which new technologies to select and influences internal research and development. Organisational learning helps identify non-economic factors, such as values and cultures. Employees share knowledge directly with their colleagues, who learn tacit skills by observing, imitating and practising. Schweiger and Kebler (2016) postulate that organisations with a high sensing capacity are capable of unceasingly and consistently acquiring strategically significant information, such as market trends, knowledge of competitors' activities and best practices from the environment.

After new opportunities have been sensed, they should be addressed through the seizing capability, which entails developing and selecting business opportunities suitable for the organisation's environment as well as its strengths and weaknesses (Teece, 2007). Seizing entails the mobilisation of resources to elude threats successfully, exploit market needs and opportunities and capture value from doing so (Kump et al., 2016). Seizing links knowledge with internal and external information and is closely linked with strategic decision-making relating to investment decisions. Seizing capability starts from a strategy that enables the recognition of valuable knowledge. An organisation has excellent seizing ability if it is capable of deciding what information is of potential value to transform into concrete business opportunities that fit its strengths and weaknesses and of acting accordingly.

As shown in Figure 7, seizing entails analysing the organisation's structures, procedures, designs and incentives for seizing opportunities. The optimal achievement of opportunities by an organisation depends on delineating the customer solution and the business model, selecting decision-making protocols, selecting enterprise boundaries to manage complements and control platforms, as well as building loyalty and commitment. Knowledge transfer and knowledge sharing processes permit the seizing of opportunities (Harris, Kaefer & Salchenberger, 2013). Knowledge transfer aids in establishing primary suppliers, recognising changing customer needs and the market segments to target, whereas knowledge sharing assists in selecting technology and targeting customers (Harris et al., 2013). The micro-foundations of seizing encompass outlining the customer solution and the business model, selecting decision-making protocols, selecting enterprise boundaries to manage complements and control platforms, as well as building loyalty and commitment (Teece, 2007).

Delineating the customer solution and the business models entails selecting technology and product architecture, designing revenue architectures, selecting target customers and designing mechanisms to capture value (Teece, 2007). A business model articulates value proposition, selection of appropriate technologies and features, ascertaining targeted market segments, defining the structure of the value chain and estimating the cost structure and profit potential (Chesbrough & Rosenbloom, 2002). Good business models attain valuable cost structures and create value propositions suitable for customers. Selecting decision-making protocols involves recognising inflexion points and complementarities, avoiding decision errors and anti-cannibalisation inclinations (Teece, 2007).

Selecting enterprise boundaries to manage complements and control platforms encompasses calibrating asset specificity, controlling bottleneck assets, assessing appropriability and recognising, managing and capturing cospecialisation economies. The organisation's boundaries should be craftily contoured for each key innovation to avoid failure in stimulating market development and partial capturing of profits available from innovation. Lastly, building loyalty and commitment to a micro-foundation requires demonstrating leadership, effective communication, recognising non-economic factors, values and culture. Top management leadership skills are required to sustain DCs and play a critical role in stimulating loyalty and commitment and in achieving adherence to innovation and efficiency as important goals (Simon, 1993:160)

Teece (2007: 1335) defines transforming, also known as managing threats as the "ability to recombine and reconfigure assets and organisational structures as the enterprise grows and as markets and technologies change". Moreover, it encompasses improving, merging, protecting and reconfiguring an organisation's intangible and tangible assets so that path dependencies and inertia are circumvented (Teece, 2007). Transforming is characterised by the actual realisation of strategic renewal within the organisation through reconfiguring resources, structures and processes. Implementation of new information and ideas in an organisation leads to renewal.

Teece (2007) concludes that organisations with a high transforming capacity consistently implement renewal activities by assigning responsibilities, allocating resources and ensuring that the workforce possesses newly required knowledge. Therefore, the ability to recombine and to

reconfigure assets and organisational structures as the organisation grows and as markets and technologies change is important for continued profitable growth. As illustrated in Figure 7, managing threats has four micro-foundations, namely decentralisation and near decomposability, governance, co-specialisation and KM.

Decentralisation and near decomposability entail adopting loosely coupled structures and embracing open innovation, as well as developing integration and coordination skills. Organisations should pursue decentralisation as they expand to ensure flexibility and responsiveness. Teece et al. (1997), argue that decentralised organisations with superior local autonomy are less likely to be blindsided by market and technological developments. Decentralisation must be preferred to sustain DCs because it brings top management closer to new technologies, the customer and the market. Customer and supply considerations that allow decomposability enable management to identify and implement decomposable sub-units that enhance performance. Governance entails achieving incentive alignment, minimising agency issue, checking strategy malfeasance and blocking rent dissipation (Teece, 2007).

Co-specialisation means that an organisation's assets are more valuable in combination than in isolation and that combination offers organisations a more sustainable competitive advantage (Douma & Schreuder, 2013; Teece, 2009). Teece (2007:1338) emphasises that an organisation's ability to recognise, develop and use combined specialised and co-specialised assets that have been built or brought is a key dynamic capability; however it does not always exist in organisational settings. He further elaborates that organisations should adopt a strategy that involves selecting and developing new technologies and new business models that build competitive advantage through amassing and coordinating valuable and unique resources and DCs (Barney, 1986; Teece, 2007). Co-specialisation entails managing strategic fit so that asset combinations are value-enhancing.

Knowledge management and its related processes are embodied as a subset of DCs and reflected as core capabilities that contribute to the reconfiguration of other organisational resources (Gold, Malhotra & Segars, 2001; Nguyen & Neck, 2008). Knowledge process capabilities consist of acquisition and conversion processes involving the accumulation of knowledge and ease the flow of knowledge from external to internal knowledge stocks of the organisation, while integrating,

distributing and transferring the newly attained knowledge within the organisation's boundaries (Gold et al., 2001; Nguyen & Neck, 2008). Knowledge management is important in decentralised structures that allow for reconfiguration and to recognise and avoid opportunities that would lead to cannibalisation. It is needed to determine which asset combinations are value-enhancing (Harris et al., 2013).

Knowledge process capabilities also include knowledge protection processes, which try to maintain the proprietary nature of an organisation's knowledge assets and include pursuing their legal protection by means of patents, trademarks and copyright (Nguyen & Neck, 2008). Knowledge processes as dynamic capabilities are regarded as a crucial component in the quest for competitive advantage (Nguyen & Neck, 2009; Verona & Ravasi, 2003; Wang & Ahmed, 2007). Organisations can deter imitation by competitors through incessant recombination and application of knowledge and these superior stocks and flows of knowledge are expected to effect a sustained advantage for an organisation (Sandhawalia & Dalcher, 2011). Knowledge process capabilities assist in growing organisational effectiveness and acquiring a competitive advantage (Paisittan, Digman & Lee, 2009).

In conclusion, the framework shown in Figure 7 designates that the degree to which an organisation cultivates and utilises superior DCs determines the nature and amount of intangible assets it will create, as well as the level of economic profits it can earn. In addition, the framework highlights that the past influences present and future performance. Many of an organisation's most valuable assets are knowledge-related, thus they are non-tradable. The coordination and integration of such assets therefore create value that cannot be replicated in the market. The need to sense and seize opportunities, as well as reconfigure when change occurs, requires the allocation, reallocation, combination and recombination of resources and assets. KM enablers and inhibitors are discussed next.

2.7 ENABLERS AND INHIBITORS OF KNOWLEDGE MANAGEMENT

Yeh, Lai and Ho (2006) define KM enablers as crucial elements that determine the success of an organisation in implementing KM. Wong (2005) emphasises that these enablers must be cultivated

if they are present or created if they are not available. Failure to take these enablers into account inhibits the successful execution of KM. Therefore, KM enablers are pertinent for the successful implementation of KM. People, information technology (IT), corporate culture and strategy are the enablers of KM and are discussed in detail below.

2.7.1 STRATEGY

According to Virkus (2014:1), a KM strategy is a "plan of action that outlines how the organisation will manage company information, data and knowledge to improve its productivity and efficiencies." Dalkir (2011:312-313) further elaborates that a KM strategy offers the fundamental building blocks applied to achieve organisational learning and continuous development to avoid wasting time replicating mistakes, as well as ensuring that everybody is cognisant of new and better ways of thinking and doing.

An effective KM strategy has the following components:

- "an articulated business strategy and objectives such as products or services, target customers, preferred distribution or delivery channels, characterization of regulatory environment, mission or vision statement;
- a description of knowledge-based business issues, for instance, the need for collaboration, need to level performance variance, need for innovation, need to address information overload;
- an inventory of available knowledge resources, for example, knowledge capital, social capital, infrastructure capital;
- an analysis of recommended knowledge leverage points that describes what can be done with the above-identified knowledge and knowledge artifacts" (Dalkir, 2011:316-317).

According to Wu (2008) and Dalkir (2011), a unique and proper KM strategy, which is based on the company's strategy is required to manage knowledge effectively. Therefore, to execute KM successfully, the KM strategy must be connected to the organisational strategy. A knowledge strategy offers an approach to ease the creation, transfer and capturing of knowledge. Knowledge strategies range from technical approaches used to retrieve mostly explicit knowledge to human-

oriented, social network-based approaches that are modified to capture tacit knowledge and create knowledge. A knowledge strategy takes precedence over one based on the situation.

The technical approach entails linking people with content through technical networks to develop added value that supports organising, applying and transferring knowledge. On the other hand, the social approach involves creating social networks such as informal teams and communities to connect people with tacit and explicit knowledge. Halawi, McCarthy and Aronson (2006:386) defined five KM strategies employed by organisations, namely KM as a "business strategy, intellectual asset management strategy, personal knowledge strategy, knowledge creation strategy and knowledge transfer strategy". KM as a business strategy concentrates on creating, capturing, and organising, renewing, sharing and using knowledge in all organisational activities (Halawi et al., 2006).

According to Halawi et al. (2006:389), the intellectual asset management strategy encompasses the "management of certain intellectual assets like patents, customer relationships at enterprise level." A personal knowledge strategy identifies the personal responsibility of each employee for KM. A knowledge creation strategy places importance on "organisational learning, research and development, motivation of employees to innovate, learn from past experiences, obtain new and better knowledge to enhance competitiveness" (Halawi et al., 2006:390).

Lastly, a knowledge transfer strategy accentuates the efficient transmission of knowledge in the organisation, as well as the implementation of best practices. Some of the benefits of having an effective KM strategy include amplified awareness and comprehension of KM in the organisation and increased senior management commitment. A KM strategy helps articulate the business case, discover potential benefits and magnetise resources for implementation. It also aids in conversing about good KM practice and provides a benchmark to measure progress. A KM strategy confers a lucid, communicable plan concerning where one is at present, where one wants to go and how one plans to get there.

2.7.2 CORPORATE CULTURE

According to Lee and Choi (2000), corporate culture is key in the execution of KM. McDermott and O'Dell (2001:79) describe culture "as shared beliefs or values and practices of the people within an organisation"; it is revealed in the organisation's mission and values. King (2008) elaborates that culture is engrained in people's actions, anticipations of each other and perceptions of each other's actions. However, culture is difficult to express because it is invisible to the employees and is entrenched in the organisation's principal values and assumptions (McDermott & O'Dell, 2001). Beliefs are eventually developed as employees take advantage of opportunities, cope with problems and make decisions and are passed on to others (King, 2008). A culture defining the rules on how people interrelate is formed when all the members accept the beliefs.

Lee and Choi (2000) assert that an open and trusting culture in which KM fits within the prevailing organisational culture must be created (Yu, Kim & Kim, 2007). The employees should have an optimistic orientation to knowledge and not be reticent in distributing knowledge for the successful implementation of KM. McDermott and O'Dell (2001) emphasise that organisations should construct a KM approach that suits their culture, not the other way round, because people can share knowledge in various ways, depending on their values. King (2008:38) proclaim that an organisation's culture affects KM in different ways such as outlining the presumptions of which knowledge is imperative and adjudicating the relations between individual and organisational knowledge. Corporate culture outlines the framework for social relations and crafts the practices used for generating as well as adopting fresh knowledge.

2.7.3 PEOPLE

People are the crucial enablers or inhibitors in the implementation of KM (Bishop, Bouchlaghem, Glass & Matsumoto, 2008). Failure to manage the organisation's knowledge assets impedes the successful implementation of KM and the functioning of all KM processes. Therefore, people should be managed effectively. Shih and Chiang (2005) indicate that implementing a good human resource management strategy and practices to ease creating, transferring and sharing of knowledge has a positive effect on the attitude, values and beliefs of employees (Lin & Kuo, 2007).

Bishop et al. (2008) encourage organisations to make sure their employees are aware of the value of KM to their organisations so that they can successfully incorporate the KM initiative into their daily activities. Employees would want the organisation to recognise and give tangible or intangible rewards, such as learning opportunities, for their knowledge contributions. Yu et al. (2007) conclude that organisations that create an environment that motivates employees to acquire and create knowledge find it easier to satisfy their end users.

2.7.4 TECHNOLOGY

IT plays a pivotal role in KM because it hastens KM processes of creating, storing, retrieving and transferring knowledge in organisations (Carvalho & Ferreira, 2001; Easterby & Lyles, 2003). Carvalho and Ferreira (2001) point out that all KM enablers should be incorporated when implementing KM because there is a direct connection between KM and KM enablers. Hence, the KM tool should be integrated with people, strategy, IT and corporate culture. Employees' commitment and enthusiasm are critical for the successful implementation of KM and an ongoing plan that involves people should be developed (Carvalho & Ferreira, 2001).

KM systems must embolden the exchange of ideas between people and rely solely on knowledge stored in databases, because it is difficult to capture all knowledge (Desouza, 2011; Carvalho & Ferreira, 2001). Although IT is a critical enabler of KM, it is not a solution for implementing KM effectively. Therefore, it is important for IT to enable the transfer of knowledge and experience among employees in the organisation. The next section examines the strengths and weaknesses of KM.

2.8 STRENGTHS AND WEAKNESSES OF KNOWLEDGE MANAGEMENT

Bousa and Venkitachalam (2013) aver that KM is critical for the survival and growth of any organisation because it drives organisational performance. KM provides many benefits to employees, customers and the organisation as a whole. Employees can improve their skills and experience through learning, sharing and working with others (Cong & Pandya, 2003). This enhances employees' performance and gives them opportunities to grow and develop their careers. KM enables customers to enjoy quality and better products and services.

KM enhances the performance of the organisation by increasing effectiveness, customer service, quality and novelties (Riege, 2007). Organisations that have an effective KM system can make better and faster decisions and reduce the risk of errors, which in turn reduces operating costs because they have better access to employees' knowledge. It also facilitates sharing and reuse of specialist expertise, improved communication among employees and rapid problem-solving. Although KM provides many benefits at all levels in the organisation, it is difficult to implement because it requires the integration of all four enablers with people who are difficult to motivate being the pertinent enabler (Riege, 2007). Moreover, many organisations find it difficult to align KM with their business goals, strategies and corporate culture.

2.9 CONCLUSION

Knowledge and KM were discussed in detail in this chapter. The key elements of KM, namely knowledge, people, processes and technology, were examined. Knowledge processes were explained using the SECI model developed by Nonaka. KM in organisational context, LOs, KWs, the DCs theory along with the integration of KM activities and DCs were deliberated. The main enablers and inhibitors of KM, namely strategy, people, culture and ICTs, were outlined. It was noted that organisations should adopt a strategy that suits the already existing culture and emphasis was placed on handling employees with caution, as they are the main enablers and inhibitors of the successful implementation of KM. Lastly, the strengths and weaknesses of KM, as well as the benefits brought about by successfully implementing KM, were considered.

Chapter 3 outlines the research methodology adopted for this study. The chapter delineates the research paradigm, research strategy, data and data collection methods used in this study. It ends with a discussion of the population, sampling, data collection instruments, data analysis and ethical considerations applicable to this study.

3 METHODOLOGY

3.1 INTRODUCTION

This chapter outlines the research methodology that was employed in solving the research problem. The purpose of a research methodology is to identify or describe a concept in order to explain or predict a situation or solution to a problem that indicates the type of study to be conducted (Beckingham, 1974).

This study aimed to find ways to implement KM successfully as an organisational tool in the electricity supply industry in Zimbabwe. This chapter details the research paradigm, research methodology, research strategy, data and data collection methods. The population, sampling method, data collection instruments and ethical considerations are also explicated in this chapter.

3.2 RESEARCH PARADIGM

A fundamental supposition and "intellectual structure on which research and development in a field of inquiry is based" is called a research paradigm (Kuhn, 1962:15). Research paradigms are characterised by three dimensions, namely what is reality thus ontology, how one knows something, thus epistemology, and methodology, which entails how one goes about reaching results (Guba, 1990:23). There are four research paradigms, namely positivism, interpretivism, realism and pragmatism (Saunders, Lewis & Thornhill, 2007).

The positivism paradigm is a "methodological philosophy in quantitative research that uses the methods of natural sciences to discover the study of social science" (Crotty, 1998:8-9). Positivists believe that there is a single reality that is known and can be measured using quantitative methods such as questionnaires (Crotty, 1998). Hammersley, (2013:22-23) states that understanding a phenomenon in reality needs measurement and supportive evidence. The positivist paradigm postulates that factual and true knowledge is based on the experience of the senses and can be obtained through observation and experiment.

Positivism is based on real and objective interpretation of data at one's disposal (Johnson, 2014). The researcher is detached, neutral and independent of what is researched. Research progresses

through hypothesis and deductions. The advantage of a positivist approach to research is that the researcher can cover a wide range of situations in a short period of time. However, using the positivism paradigm in social research projects makes it impossible to measure phenomena related to intention, attitudes and thoughts of a human, because these concepts may not be explicitly observed or measured with experience of the senses or without evidence (Hammersley, 2013: 23-24).

The realism paradigm is "influenced by different theories and philosophies with a common theme of emancipating and transforming communities through group action" (Mertens, 2009:38). Realism research philosophy relies on the idea of independence of reality from the human mind. Realism is similar to positivism; however, realism takes into account the subjective nature of research and the vital function of values in it (Fisher, 2007). Realism can be divided into two categories, namely direct and critical realism.

Direct realism depicts the world through personal human senses, thus "what you see is what you get" (Saunders et al., 2012:28). On the contrary, according to critical realism what is experienced by human sensations are images of the real world, not the reality; sensations and images of the real world can be deceptive and usually do not portray the real world (Novikov & Novikov, 2013). The difference between the two is that the first is related to the capacity of research, what is studied and the critical realist recognises the importance of multi-level study in the context of the individual, the group and the organisation.

Pragmatists believe that reality is constantly renegotiated, deliberated and interpreted, so the best method to use is the one that solves the problem (Crotty, 1998). The ontology of pragmatism is symbolic realism. Pragmatism research philosophy accepts concepts as relevant only if they support action. Pragmatists know that several diverse ways of interpreting the world and undertaking research exist; no single point of view can ever present the whole picture and multiple realities may subsist (Saunders et al., 2012:30).

Pragmatism is concerned with action, change and the interplay between knowledge and action. Hence, it is pertinent to research approaches to intervene in the world, such as action research or

design research, and not merely to observe the world (Cole, Purao, Rossi & Sein, 2005; Iivari & Venable, 2009; Jarvinen, 2005). It uses constructive knowledge acquired through inquiry type investigation. Pragmatism data is generated through and used in both assessment and intervention. In pragmatism, understanding is seen as instrumental in relation to the change of existence (Dewey, 1931). The role of the researcher is to be engaged in change and to promote change.

The interpretivist paradigm, which claims that people cannot be detached from their knowledge or be isolated from their social context and should hence be studied in their natural setting, was used for this study (Cresswell, 2003). People are the main inhibitors of the successful implementation of KM, hence an in-depth study of their values, beliefs and experiences in their natural setting will enhance KM adoption in the electricity supply industry. The interpretive paradigm uses the subjective viewpoints of the participants in the social context in which the reality is positioned to construe a social reality (Mertens, 2009). According to interpretivists, reality is restricted to time, space, context, persons or groups in a set condition, thus cannot be generalised into a single universal truth (Creswell, 2003; Mertens, 2009). In interpretivism, understanding is seen as a value of its own (Dewey, 1931).

The researcher seeks to understand the world as others experience it. The suppositions legitimise the concepts of "realities from all cultures, individual realities and group shared realities" (Mertens, 2009:39). The epistemology for this paradigm is that knowledge is subjective, as it is mind-dependent and created socially; reality lies in the individual's experience, therefore social inquiry is value-laden and value-bound. Kuhn (1962, 1970) states that under this paradigm researcher are entrenched in the social context they are researching to understand the world as others experience it. The interpretive research paradigm was suitable for this research because it helped the researcher to obtain in-depth understanding of the research problem, using qualitative methods that were accurate, trustworthy and honest. A discussion of the research methodology follows.

3.3 RESEARCH METHODOLOGY

Research methodology refers to the specific procedures or techniques used to identify, select, process, and analyse information about a topic. According to Armstrong (2009), quantitative

research is based on the collection of factual data that is measured. On the other hand, qualitative research offers a complete description and analysis of a research subject, without limiting the scope of the research and the nature of participants' responses (Collis & Hussey, 2003). Therefore, qualitative research generates insight into situations and behaviours so that the meaning of what is happening is understood. Table 2 illustrates the differences between qualitative and quantitative research.

Table 2: Features of Qualitative and Quantitative Research (adapted from Miles & Huberman (1994:40)

Qualitative research	**Quantitative research**
The aim is a complete, detailed description.	The aim is to classify features, count them, and construct statistical models in an attempt to explain what is observed.
Researcher may only know roughly in advance what he/she is looking for.	Researcher knows clearly in advance what he/she is looking for.
Recommended during earlier phases of research projects.	Recommended during later phases of research projects.
The design emerges as the study unfolds.	All aspects of the study are carefully designed before data is collected.
Researcher is the data-gathering instrument.	Researcher uses tools, such as questionnaires or equipment, to collect numerical data.
Data is in the form of words, pictures or objects.	Data is in the form of numbers and statistics.
Subjective: - individuals interpretation of events is important, e.g., uses participant observation, in-depth interviews etc.	Objective: seeks precise measurement and analysis of target concepts, e.g. uses surveys, questionnaires etc.
Qualitative data is 'richer', time-consuming, and less able to be generalised.	Quantitative data is more efficient, able to test hypotheses, but may miss contextual detail.
Researcher tends to become subjectively immersed in the subject matter.	Researcher tends to remain objectively separated from the subject matter.

Qualitative research is employed when a problem or issue needs to be explored. Unlike quantitative research, which is focused on numbers, qualitative research is focused on words (Creswell, 2012; Miles & Huberman, 1994). In order to fulfil the objectives of this study, a qualitative research method was adopted. Although the outcomes of qualitative research are neither measurable nor quantifiable, it is mostly suitable for small samples like this case study. The researcher chose the qualitative research approach because unlike quantitative research, qualitative research gives a comprehensive description and analysis of a research subject, without limiting the scope of the research and the nature of participants' responses (Collis & Hussey, 2003; Creswell, 2012). The research strategy is explored in the next section.

3.4 RESEARCH STRATEGY

A research strategy refers "to a general plan which aids the researcher in responding to the research questions in a systematic way" (Saunders et al., 2007). This study used a case study research method, which is an "empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidence is used" (Yin, 1984:23). The subjects of study in a case study comprise a small geographic area or a very limited number of individuals. Case studies are most suitable when the goal of research is to find answers to 'why' and 'how' type of questions and contemporary events are studied when it is not possible to control behavioural events (McDonough & McDonough, 1997). Case studies allow the researcher to analyse the data in a particular context meticulously.

Since this study focused solely on the electricity supply industry, the case study research strategy was suitable because it assisted in gaining comprehensive understanding of KM in this industry. Zainal (2007) declares that a case study qualitative method is employed in studying real-life circumstances concerning social issues and problems. The case study method encompasses a detailed, cautious and comprehensive investigation of a social unit. This method stresses the importance of fully analysing a restricted number of processes or events along with their interrelations (Creswell, 2003). Case studies are categorised into three forms, namely "exploratory, descriptive and explanatory" (Yin, 1984:23).

Exploratory case studies "explore any phenomenon in the data which serves as a point of interest to the researcher" while descriptive case studies "describe the natural phenomena which occur within the data in question" (Yin, 1984:24). Lastly, explanatory case studies "examine the data closely both at a surface and deep level in order to explain the phenomena in the data" (Yin, 1984:24). Explanatory case study was applied in this research to solve the research problem. Yin (1984) says that archival records, documentation, direct observations, interviews, participant observation and physical artefacts are the primary data collection methods used in case studies.

The benefits of using case studies include a comprehensive understanding of the unit under study. The researcher gets a genuine record of personal experiences that discloses the motivations that drive people to adopt certain behaviours. This method also aids in framing a hypothesis and provides data that can be used to test it (Creswell, 2003). Case studies allow the researcher to determine the history of the social unit under scrutiny and its relationship with social factors and forces involved in its environment. Lastly, case studies produce meticulous qualitative accounts that help describe the intricacies of real-life circumstances that cannot be recorded by experimental or survey research (Yin, 1984).

3.5 DATA AND DATA COLLECTION METHODS

Polit and Hungler (1999:267) define data as "information obtained in a course of a study". Two types of data exist, namely primary and secondary data. Primary data refers to the data that is collected for the first time, while secondary data refers to published or unpublished data that has already been collected and analysed by other people (Kothari, 2004). Primary data is collected using primary methods, such as observations, interviews and questionnaires. Secondary data is collected through secondary methods such as business or industry publications, public records and statistics, historical documents, journals, books, magazines, diaries and unpublished biographies (Saunders, et al., 2012).

A questionnaire that entailed issuing a set of recorded questions to which people responded directly on the questionnaire form itself, without the aid of an interviewer, was used to collect data (Monette, Sullivan & DeJong, 2011). Questionnaires are a practical and inexpensive way of

collecting large amounts of data from a large number of people in a relatively short time (Saunders et al., 2012). However, strong targeting of respondents is important to receive the most accurate results.

Questionnaires put respondents at ease and give them the confidence to answer truthfully because they allow people to maintain their anonymity and privacy (Kothari, 2004). Questionnaires permit the collection of information that would not have been volunteered using other techniques (sensitivity effect) because it allows respondents to remain anonymous. Questionnaires are usually easy to complete and data collected using questionnaires is easy to quantify (Brancato et al., 2004). Although questionnaires offer the benefits mentioned above, some of the disadvantages of using questionnaires include respondents giving false information or not answering the questions, as well as differences in understanding and interpretation of the questions (Saunders et al., 2007).

Semi-structured face-to-face interviews in which the interviewer asked the interviewee questions were also used. The interview questions were drafted in advance and standardised techniques of recording information were used. Semi-structured interviews are conducted in the form of formal interviews between the interviewer and informants. The interviewer develops and uses an interview guide containing questions and topics following a certain order to be covered during the interview (Kothari, 2004).

Semi-structured interviews use a combination of closed and open-ended questions that are regularly accompanied by follow-up ‘why’ or ‘how’ questions. Semi-structured interviews provide a fairly open framework that allows focused, conversational and two-way communication. The interview questions are prepared in advance for semi-structured interviews. Unlike structured interviews that adhere to verbatim questions, the conversation in semi-structured interviews enables the interviewer to explore unanticipated matters because the type of interview allows them to wander around the topics on the interview guide (Saunders et al., 2007).

Semi-structured interviews offer various benefits which include enabling informants to express their own opinions freely. They also provide reliable, comparable qualitative data (Adams, 2015). Semi-structured interviews permit the interviewer to compare the results of one interview with another (Saunders et al., 2012). These interviews encourage two-way communication and not only confirm

what is already known, but also provide the opportunity to learn. The information acquired from semi-structured interviews provided not just answers, but also the reasons for the answers (Adams, 2015). Semi-structured interviews were employed in this study to understand and learn how the subject under study operates and how it can be improved.

According to Trochim (2006), secondary data is data that has already been collected by somebody else and is readily available. Secondary data sources assisted the researcher in gaining insight into the research problem and contextualising the research. The researcher used the organisation's documents, magazines, company records and manuals. The secondary sources were cheap to obtain and readily available. The next sub-sections investigate the structure of the questionnaire and semi-structured interview data collection instruments.

3.5.1 STRUCTURE OF THE DATA COLLECTION INSTRUMENTS

Data collection is important for any research. This study used both primary and secondary methods of data collection, as discussed in the previous section. The researcher used questionnaires and semi-structured interviews as primary sources, as well as company manuals and documents as secondary sources. The primary sources were used for their originality and relevance to the topic under study. Secondary sources, such as company manuals and magazines, were used to contextualise the research and gain insight into the research problem. The questionnaire and interview questions were designed to gather as much information on the current KM system and practices at ZETDC as possible.

3.5.1.1 QUESTIONNAIRE

Questionnaires entail systematic collection of data through acquiring answers to questions on the key issues and opinions to be investigated. The researcher used 34 structured open-ended and closed questions, which facilitated probing to gain more information. The questionnaire comprised the following five sections:

- **Section A: Background information**

The background information section covered respondents' position in the organisation, period of service in their current position and period of working in the organisation. The background information helped contextualise the findings as well as the formulation of appropriate recommendations to advocate the application of KM as an organisational tool at ZETDC.

- **Section B: General knowledge management**

This section was designed to determine the respondents' general understanding of knowledge and KM. Data concerning the various forms of knowledge as well as strategies, processes and technologies that exist at ZETDC was collected.

- **Section C: Knowledge management processes**

Section C examined the various KM processes, namely knowledge creation, sharing, transfer and storage. Data on the various tools and techniques used in these processes was analysed. Data on the challenges encountered in differentiating, creating, sharing, collecting and storing the various types of knowledge was also gathered.

- **Section D: Organisational learning and culture**

This section analysed the organisation's current corporate culture and its weaknesses, as well as ways to improve it so that it can promote continuous learning. Organisational learning at ZETDC was also examined.

- **Section E: Knowledge management technologies**

Data regarding the KM technologies at ZETDC was collected.

3.5.1.2 SEMI-STRUCTURED INTERVIEW

Semi-structured interviews were held to gather rich data in areas of interest (Armstrong, 2009). The interview questions were used to develop in-depth understanding in certain areas of the study. Since qualitative data focuses on collecting rich and meaningful data, the interview process was organised in a manner that would allow participants to communicate freely, giving a detailed account of their

experiences under investigation and expressing their concerns (Smith et al., 2009). This study focused on establishing ways to apply KM as an organisational tool in the electricity supply industry in Zimbabwe. Hence, semi-structured interviews were required to gather information on the subject. The semi-structured interviews comprised 12 open-ended and closed-ended questions that covered all six sections of the questionnaires in greater detail to gain in-depth insight into KM at ZETDC and ways in which it can be improved. The next section scrutinises the population for this study.

3.6 POPULATION

A population is "an aggregate or totality of all the objects, subjects or members that conform to a set of specifications" (Polit & Hungler, 1999:37). This study's target population was employees from all levels, in the main business units that contain knowledge that is critical for the running of ZETDC. Table 3 shows the target population. The participants' eligibility criteria for this study were that they had to:

- be employed by ZETDC at the time the research was carried out,
- work in the main business units that contain knowledge critical for the running of ZETDC,
- fulfil any of the following job roles: apprentice, trainee, technician/artisan or engineer,
- supervise a number of people

The sample interviewed included technicians and engineers.

Table 3: Target Population

Description	Population	Remarks
Managers	10	These were from ZETDC Harare. Managers are responsible for strategy formulation and decision-making.
Engineers	14	The engineers were from different areas of

		specialisation in ZETDC.
Artisans/Technicians	16	Both electrical and mechanical artisans were selected to participate in the research and equal numbers were drawn from ZETDC.
Trainees	8	The post graduate trainees for this study were drawn from ZETDC Harare Region, specifically those from various engineering disciplines.
Apprentices	7	These were from ZETDC and from various disciplines.
Total	**55**	

3.6.1 SAMPLING

Sampling is a method used to select a portion of the populace to represent the entire population (Kothari, 2004). A number of employees from the main business units that use knowledge critical for the running of ZETDC were selected. Time and money were saved by selecting a sample to be studied rather than attempting to study the entire population. Obtaining data from the population of ZETDC employees' as well as analysing and interpreting huge volumes of data, would have been impossible to accomplish within the time constraints and with the limited financial resources that were available for conducting this research.

3.6.2 SAMPLING METHOD

A sampling technique is a procedure used to select the members of the sample. Two sampling methods exist, namely probability sampling and non-probability sampling. Probability sampling, which is also known as random sampling, is a type of sampling where each member of the population has a known probability of being selected for participation in the sample. Non-probability sampling, also known as purposive sampling, is a type of sampling where each member of the population does not have any known probability of being selected for participation in the sample. According to Creswell (2012), qualitative research requires the purposeful selection of participants because only those selected can provide insights into the research being carried out. Therefore, this study used non-probability sampling to select participants for the semi-structured interviews and questionnaires. Participants for both questionnaires and semi-structured interviews were selected through liaising with the human resources (HR) department and those that did not feel comfortable taking part in the study were excluded. The criteria used to select participants entailed selection of respondents involved in the main business units that possess knowledge critical for the functioning of ZETDC.

Information from different levels of the organisation was required, hence participants were selected from all levels in the organisation so that responses could be compared. This helped the researcher circumvent a selection error where some subunits would not be represented. Non-probability was appropriate for this research because it only focused on the employees with knowledge to perform critical tasks at ZETDC. This method of sampling was very convenient and relatively cheap (Burns & Grove 2001).

3.6.3 SAMPLE SIZE

Brink (1996:133) defines a sample as “a subset of a population selected to participate in the study; it is a fraction of the whole, selected to anticipate in the research project” (Polit & Hungler, 1999:227). As a sample determines the accuracy of the research’s results, the general rule of thumb of always using the largest sample possible should be followed. The larger the sample the more representative it is going to be; smaller samples produce less accurate results because they are likely

to be less representative of the population (LoBiondo-Wood & Haber 1998:263-264). Onwuegbuzie and Leech (2007) further elaborate that a sample size should not make it difficult for the researcher to extract data by being too large or make it hard to attain data saturation by being too small. In this study, a subset of 30 participants was selected from the target population to represent the main business units that use knowledge that is critical for the successful running of ZETDC. Employees who were at work when the researcher conducted interviews and who were willing to be interviewed were included in the sample. The description of the sample is displayed in Table 4.

Table 4: Description of sample

Description	Population	Remarks
Managers	5	These were from ZETDC Harare. Managers are responsible for strategy formulation and decision-making. Some are engineers and technicians by profession.
Engineers	7	The engineers were from different areas of specialisation in ZETDC.
Artisans /Technicians	8	Both electrical and mechanical artisans were to participate in the research and equal numbers were drawn from ZETDC
Trainees	6	The post graduate trainees for this study were drawn from ZETDC Harare Region, specifically those from various engineering disciplines.
Apprentices	4	These were from ZETDC and from various disciplines.
Total	**30**	

3.7 DATA COLLECTION

According to Kulkarni (2013), triangulation refers to the use of more than one method to collect data on the same topic. This study used triangulation of questionnaires and semi-structured

interviews to collect data. Different dimensions of the topic were captured from the data collection methods employed and cross-validation of data from the two methods was permitted. This section explains in greater detail how data was collected using questionnaires and semi-structured interviews. The process used to analyse the collected data is also outlined.

3.7.1 DATA COLLECTION OF QUESTIONNAIRES

Prior to data collection, the researcher did a survey to check whether participants preferred completing the questionnaire online or filling in hard copies. The majority of the respondents expressed security and privacy concerns regarding online surveys and stated they preferred filling in the hard copies. The researcher designed and developed the questionnaire using Microsoft Office Word 2010 (Appendix 8.5). The questionnaire comprised a cover letter from ZETDC permitting the researcher to conduct research in the organisation, a researcher declaration form signed by the researcher, a research consent form to be signed by the participants and the questionnaire. Brancato et al. (2004) urge researchers to test their questionnaires with regard to the wording of questions and content stating that respondents may get confused about the overall meaning of the question if questions are not properly worded.

To curb confusion and ambiguity of the questions, a few questionnaires were printed and given to a supervisor, a few laymen and employees at ZETDC to check for ambiguity. A few corrections were made on the questionnaires, such as grammatical and wording errors, before they were printed for the participants to fill in. A date and time for a meeting with the respondents to fill in the questionnaires were scheduled by the researcher with the ZETDC's HR department. The researcher took the questionnaires physically to the ZETDC offices for completion by respondents on 10 September 2019 at 10:00. The proposed time for completing the questionnaires was scheduled to be 45 minutes. The researcher, with the aid of two HR officers, issued the questionnaires to the participants. The researcher explained to the participants that they were supposed to fill in the research consent form and that they were free to withdraw from participation at any time.

The researcher waited for the participants to complete the questionnaires and collected them on the same day. A code name was given to each respondent, which ranged from Z1 up to Z25 as 25 of the

25 participants identified completed the questionnaire, yielding a response rate of 100%. The questionnaire responses were then captured onto Microsoft Office Excel 2010 and analysed using thematic analysis which will be discussed in detail in Section 3.7.3. The completed questionnaires were kept secure and confidential in a locked file cabinet by the researcher, as clarified on the consent form.

3.7.2 DATA COLLECTION DURING SEMI-STRUCTURED INTERVIEWS

Qualitative data focuses on collecting rich and meaningful data. Therefore, the interview process was organised in a manner that would allow participants to communicate freely, giving a detailed account of their experiences under investigation in this study and expressing their concerns (Smith et. al, 2009). The participants expressed secrecy and privacy concerns with voice recordings, so the interviewer used a paper-based interview guide and jotted down notes while conducting the interview. The researcher designed and developed 12 open- and closed-ended questions for the semi-tructured interviews using Microsoft Office Word 2010 (Appendix 8.6). The questions focused on KM practices and processes at ZETDC and how these can be improved, current KM benefits to ZETDC, as well as what can be done to enjoy all the benefits of KM. The questions were sent to the researcher's supervisor and HR department via electronic mail to check for clarity and ambiguity. No updates were made to the semi-structured interview guide as the researcher's supervisor and HR department indicated that it was acceptable. A date and time were set for the interviews with five participants. The interviews were scheduled for two days at ZETDC Harare offices. Table 5 illustrates the interview schedule for the research participants.

Table 5: Interview schedule for the research participants

RESEARCH PARTICIPANT	INTERVIEW TRANSCRIPTION CODE	DATE OF INTERVIEW	START TIME OF THE INTERVIEW
P1	Z26	25 September 2019	10:30
P2	Z27	25 September 2019	11:45
P3	Z28	26 September 2019	09:00
P4	Z29	26 September 2019	10:10

P5	Z30	26 September 2019	11:10

The interviews took 45 minutes per session with each interviewee and took place in a location that was familiar, comfortable and convenient for the participant. The interviews were conducted in English and the participants were asked to sign a consent form on the day prior to the study taking place. The researcher transcribed all interview responses, which were used for analysis. Follow-up questions were asked to delve further into particular areas that were beneficial to the study and analysis. As shown in Table 5, participants were given code names ranging from Z26 to Z30; all five of an identified five participants attended the interview, yielding a response rate of 100%. Participants were asked to review their response transcripts for accuracy and all participants approved the transcription. The participants' transcripts were kept secure and confidential in a locked file cabinet by the researcher, as clarified on the consent form. The responses were then captured onto Microsoft Office Excel 2010 and analysed using thematic analysis by the researcher. Thematic analysis, which was used to analyse the collected data, is discussed in detail in the next section.

3.7.3 DATA ANALYSIS

After data has been collected, the next step entails analysing it. Data analysis is the "process of bringing order, structure and meaning to the mass of collected data" (Marshall & Rossman, 1999:150). The purpose of data analysis is to summarise the gathered data. It entails interpreting data collected using analytical and logical reasoning to establish patterns, relationships or trends. Some of the methods and techniques used to analyse data include descriptive analysis, regression analysis, decision trees and thematic analysis. The data gathered from the semi-structured interviews and questionnaires were analysed using thematic analysis. According to Braun and Clarke (2006), thematic analysis is a process used to identify, analyse and report patterns in data.

Thematic analysis accentuates identifying, investigating and recording patterns or themes in data and delineates themes as patterns across data sets that are essential for the depiction of a phenomenon and are related to a specific research question (Braun & Clarke, 2006; Attride-Stirling, 2001). Thematic analysis was used to ascertain the pattern of themes in the questionnaire and semi-

structured interview data. Unlike other methods, which are closely tied to specific theories, thematic analysis can be used with any theory. This flexibility permits rich, comprehensive and complex description of the researcher's data (Braun & Clarke, 2006).

Thematic analysis also provides a structure for organising themes and help in interpreting the research topic (Braun & Clarke, 2006). Adopting thematic analysis for this study allowed the researcher to capture and organise the collected data into patterns that gave meaning and answered the research questions (Braun & Clarke, 2006). Thematic analysis follows a six-phase coding process shown in Figure 9 to generate meaningful and traditional patterns. The six phases include familiarisation with data, generating initial codes, searching for themes among codes, reviewing themes, defining and naming themes and producing the final report (Braun & Clarke, 2006; Maguire & Delahunt, 2017).

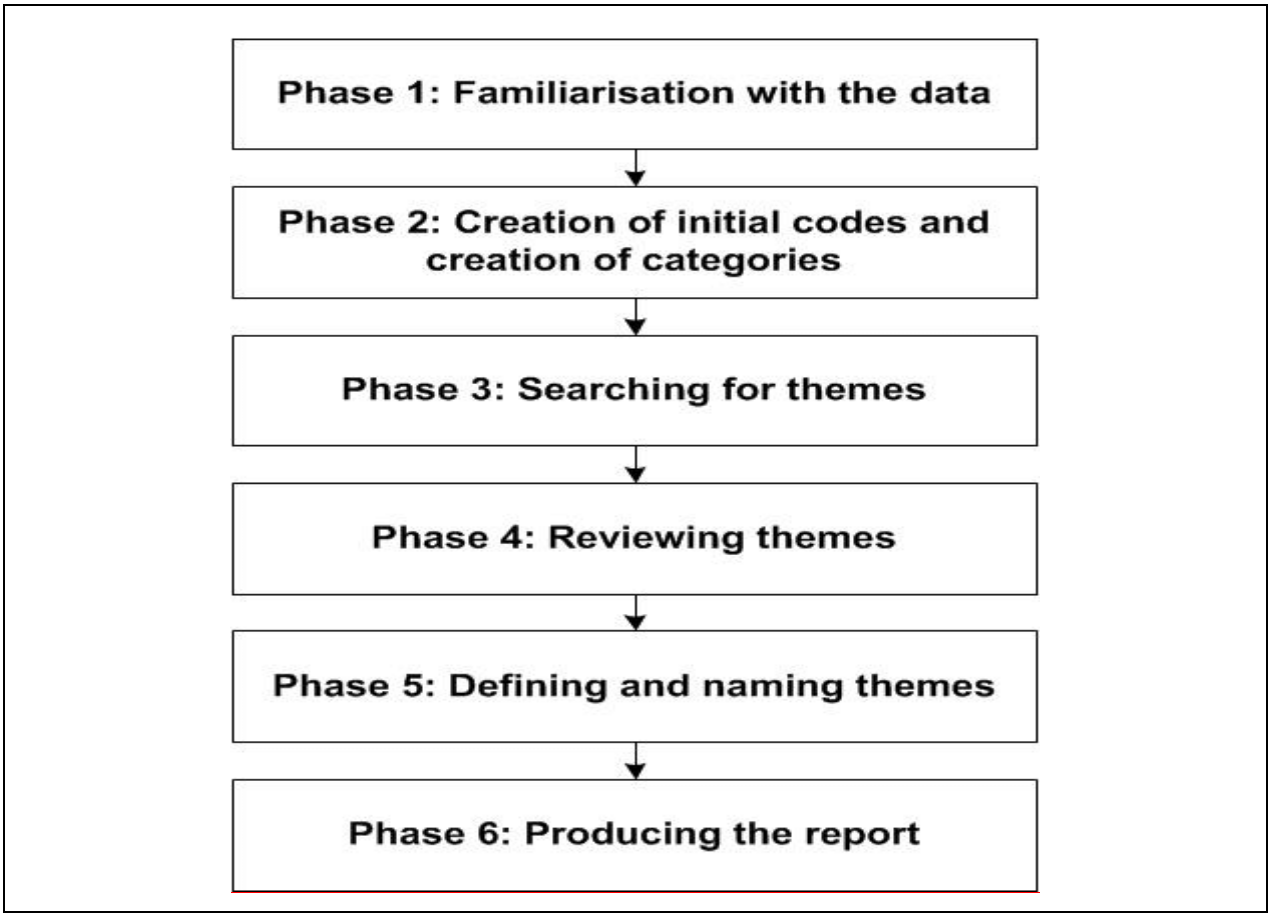


Figure 8: Braun and Clarke's six-phase framework for doing thematic analysis (Braun & Clarke, 2006: 56)

Familiarisation with data entails reading and re-reading data until the researcher is familiar with the data, taking into consideration the patterns that occur (Javadi & Zarea, 2016). Generating the initial codes stage involves recording where and how patterns occur by using coding which is a "systematic way of organizing and gaining meaningful parts of data as it relates to the research question" (Javadi & Zarea, 2016). The coding process, is a cyclic procedure in which codes emerge during the research process and develop through inductive analysis (Braun & Clarke, 2006). Data reduction and data complication occur in this stage and the investigator makes inferences about the codes' meaning (Braun & Clarke, 2006).

Searching for themes entails combining codes into overarching themes that show the data accurately (Braun & Clarke, 2006). The researcher develops themes that portray the meaning of themes exactly even if they appear unfit and looks at what is missing from the analysis. The reviewing themes stage identifies how data is supported by the themes and the overarching theoretic view (Javadi & Zarea, 2016). Defining and naming themes involves coming up with an all-inclusive enquiry on how themes help comprehend the data (Braun & Clarke, 2006; Javadi & Zarea, 2016). Lastly, the final stage of producing a report entails "analysing the data, writing a narrative about the data and making an argument in relation to the research questions providing a concise, coherent, logical, non-repetitive and interesting account of the story the data tell within and across themes" (Braun & Clarke, 2006:93).

Various software programs such as NVivo and SPSS are used for data analysis. Microsoft Office suite, specifically Microsoft Word and Excel 2010, were used for the study for thematic analysis. The hand-written responses were captured electronically into Microsoft Word, with a record for each participant's responses, thus 30 records for the 30 participants. Subsequently, the data was transferred to Microsoft Excel, one comment per Excel cell. The participants' responses were cross-referenced and compared making sure all the points were captured correctly and replica entries were eliminated. An ultimate list was compiled for analysis and the detection of themes. The emergent themes were colour-coded and the data points supporting the theme were colour coded to match the emergent themes. Microsoft Excel's filter, which was established to sort by cell colour, was applied to the data. Data was analysed again to identify overlapping points. The overlapping points were combined and recorded in Microsoft Excel. Data was analysed several times with the aim of

compressing the data. Finally, a synopsis of the data with the top points under each theme was created. The next section outlines the ethical considerations for this study.

3.8 ETHICS

Leedy and Ormrod (2010) emphasise that ethics should be taken into account when carrying out an investigation that involves people. The researcher first applied for permission from ZETDC to carry out research using questionnaires and semi-structured interviews in their organisation, as shown in Appendix Section 8.1. The researcher was permitted to conduct research at ZETDC, as indicated in Section 8.2. The researcher applied and received ethical approval from the University of Pretoria's EBIT Research Ethics Committee prior to commencing this study as shown in section 8.3. Before issuing questionnaires and conducting semi-structured interviews, the researcher clarified the purpose of the research to the participants and asked for their permission through a research consent form.

In addition, the participants were given the opportunity to ask any questions before the interviews and questionnaires commenced and were reminded of their right to withdraw from participation at any time. A consent form presented in Section 8.4 was given to the participants to sign to show that they had agreed to participate in the research. A researcher declaration form shown in Section 8.5 was completed by the researcher. The researcher maintained the principles of honesty, informed consent, privacy and confidentiality, as well as protection from harm and professionalism, when dealing with participants. During transcription, all names were changed to code names to ensure respondents' confidentiality. Sources of information used in this research will also be acknowledged following copyright and licensing policies.

3.9 CONCLUSION

This chapter outlined the research methodology, research paradigm, data and data collection methods. The population, sampling method and structure of the data collection instruments and data analysis were explored. The advantages and disadvantages of the paradigm and research strategy were discussed. Semi-structured interviews and questionnaire primary data collection methods used in this study were discussed in detail. Ethical considerations were also outlined to ensure that people

felt comfortable when giving information, knowing their identities would be kept private and confidential. Approval to carry out research was obtained from ZETDC, while ethics approval was obtained from the University of Pretoria's EBIT ethics committee.

Chapter four outlined and examined the findings from the data collected through questionnaires and semi-structured interviews. The responses from data collection were grouped into two categories, namely questionnaire response analysis and interview response analysis. Graphs and tables were used to represent the collected data. Data gathered using the questionnaires and semi-structured interviews was analysed using thematic analysis.

4 ANALYSIS OF FINDINGS

4.1 INTRODUCTION

This chapter collates the researcher's findings during the period of research through presenting, analysing and interpreting the data to derive meaning and implications. The results of the research are discussed, stating the outcome of the research and the key findings leading to appropriate recommendations, which are detailed in the next chapter. The questionnaire used in this retrospective study was carefully analysed to ensure that the data gathered was presented clearly with the aid of tables and graphs, where possible. The questionnaire and interview questions are attached; see Appendices 8.6 and 8.7. Themes were developed covering all the main subject areas or sections as presented in the questionnaire. Each main theme and its sub-themes were introduced and analysed and the key findings were detailed and finally discussed. The aim was to simplify the data for easier interpretation and understanding.

4.2 CASE STUDY ENVIRONMENT BRIEF BACKGROUND

ZESA Holdings is a solely state-owned company responsible for generating, transmitting and distributing electricity in Zimbabwe. It was established by Act in 1981 and formed in 1985. ZESA Holdings falls under the Ministry of Energy and Power Development and it represents Zimbabwe in the Southern African Power Pool. ZESA Holdings has four subsidiaries, namely Zimbabwe Power Company (ZPC), ZETDC, the Zimbabwe Electricity Distribution Company, ZESA Enterprises (ZENT) and PowerTel Communications (Private) Limited.

ZPC is an investment vehicle in the generation of electricity and was formed in 1996, but started operating in 1999. It is responsible for constructing, owning, operating and maintaining power generation stations for the supply of electricity. ZETDC is liable for transmitting electricity from power stations, distributing electricity and retailing it to end users (ZETDC, 2016). ZENT is responsible for investments for ZESA Holdings. It focuses on new dimensions, such as land development, irrigation works and installations, manufacturing electricity, end use equipment, development of new IT products and regional markets. ZENT comprises four business units namely

ZESA Technology Centre, Production and Services, Transport Logistics and Projects. PowerTel communications is a registered internet services provider in Zimbabwe.

ZETDC has offices in all four regions, namely the northern region, southern region, eastern region and western region in Zimbabwe, and small sub-offices in almost every city. ZESA Holdings has been faced with numerous challenges, which include perennial blackouts that have affected production in almost every sector, higher electricity rates compared to regional rates and failure to pay its employees, which has led to high staff turnover, among others. This research focuses on one subsidiary, called ZETDC, which is responsible for transmitting electricity from power stations, distributing electricity and retailing it to end users.

4.3 SURVEY RESULTS

Questionnaire Response Analysis

The researcher issued questionnaires to 25 participants and all 25 duly completed questionnaires were returned. As shown in Table 6, the completed questionnaires constituted a return rate of 100%.

Table 6: Research questionnaire response rate

	COMPLETED	NOT COMPLETED	TOTAL
FREQUENCY	25	0	25
%	100	0	100

The high response rate of 25 (100%) completed questionnaires was achieved by strictly following through on all distributed questionnaires with the help of the HR department of ZESA Holdings.

Interview Response Analysis

There was a 100% interview response rate in which the researcher managed to conduct all scheduled interviews. This was only possible because a small number of participants took part in the interviews. The purpose of the interviews was to allow the researcher to obtain rich data using a different approach.

4.3.1 BACKGROUND INFORMATION

The background information section covered respondents' position in the organisation, duration of service in their current position and period of working for the organisation. The background information was highly important to the study because it helped contextualise the findings and formulate appropriate recommendations to advocate the use of KM as an organisational tool at ZETDC.

4.3.2 POSITION IN THE ORGANISATION

The sample selected comprised participants who represented the main business units that contain knowledge critical for the running of ZETDC. Figure 9 shows the various positions of all 30 respondents including the interviewees who participated in this research. As shown in Figure 9, most respondents were technicians (26.7%) followed by engineers (23.3%), trainees (20%), managers (16.7%) and apprentices (13.3%). This is representative of ZETDC's KWs. Efforts were made to make the sample representative of ZETDC's populace, so a proportionate number of participants of apprentices and trainees took part. Participants from every level were selected for the questionnaires so that varied responses could be obtained from all levels in the organisation.

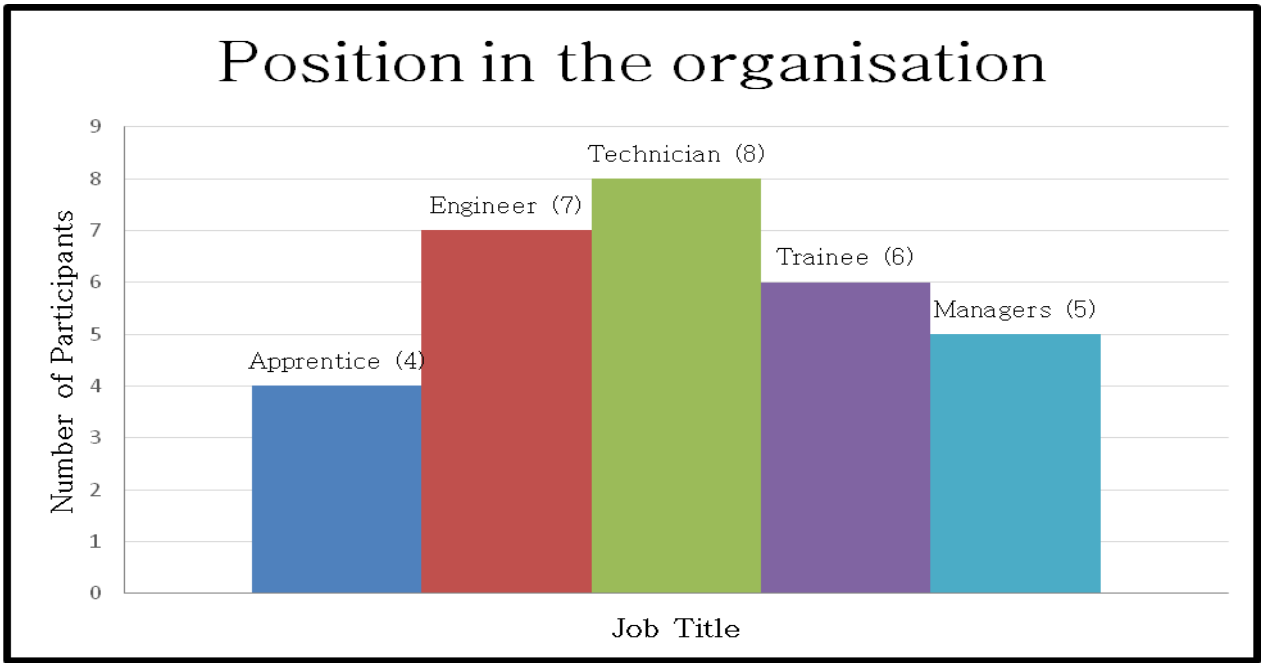


Figure 9: Position in the organisation

4.3.3 DURATION OF EMPLOYMENT IN THE ORGANISATION

The duration of employment in the organisation plays an important role in getting different views from the participants depending on how long they had been with the organisation. It was also helpful in analysing the trends in KM over the years. As shown in Figure 10, eleven of the respondents had been with the organisation for three to five years, followed by eight with over five years' service, then seven between one and two years' service and lastly, four with less than one year's service. The participants with less than one year's service were apprentices and trainees and those with between one and two years' service were apprentices, trainees and technicians. Those whose duration of employment was three to five years and over five years were engineers and technicians. Looking at the duration of employment helped the researcher gain insight into the perceptions with which participants arrive at ZETDC and those that they develop later in their employment life, where social influence plays a role in shaping their understanding.

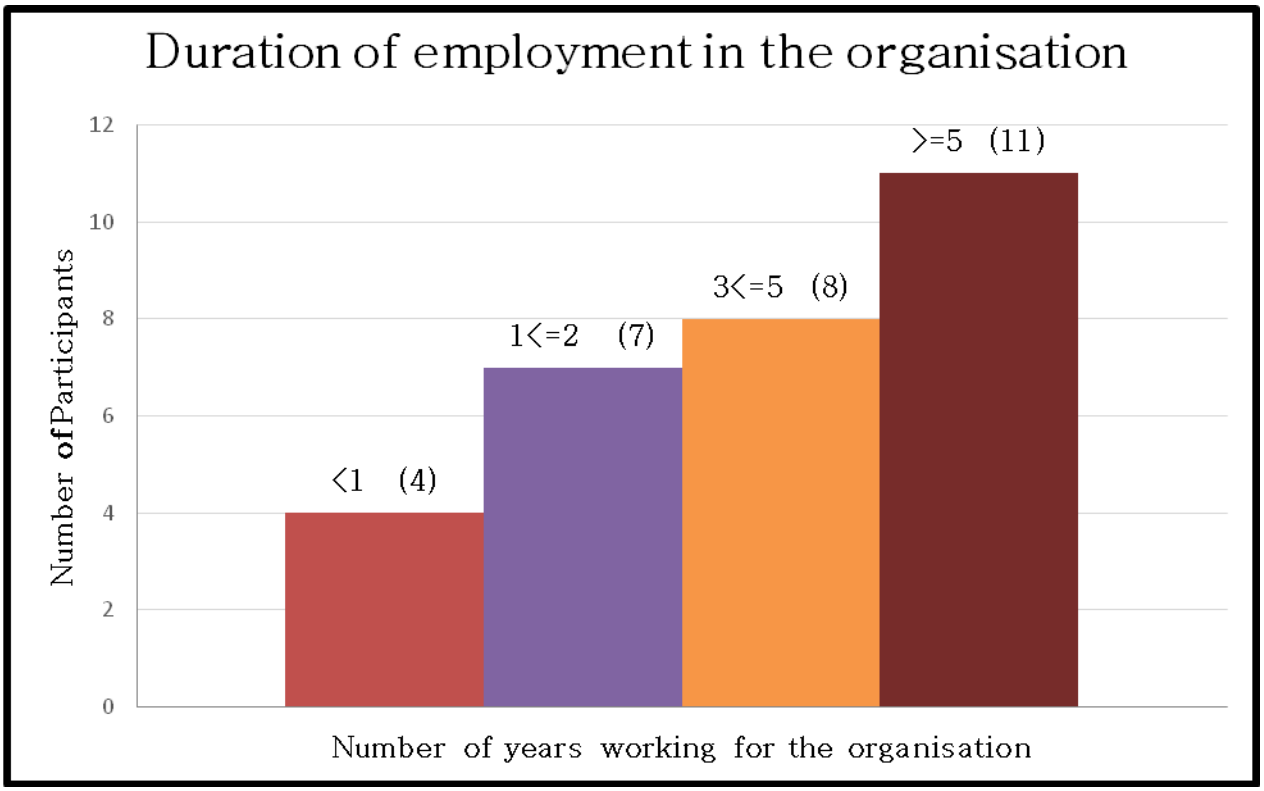


Figure 10: Duration of employment in the organisation

4.3.4 DURATION OF EMPLOYMENT IN CURRENT POSITION

This question looked at the number of years the respondents had been in their current position in the organisation. According to Figure 11, the highest number of respondents had been in their current position for three to five years, followed by those serving for over five years, then some working for one to two years and a few for less than a year. Those who had been with the organisation for less than a year were graduate trainees and apprentices. The participants with between one and two years' service were apprentices, trainees and technicians and those with three to five years' service or more than five years' service in their current position were engineers and technicians.

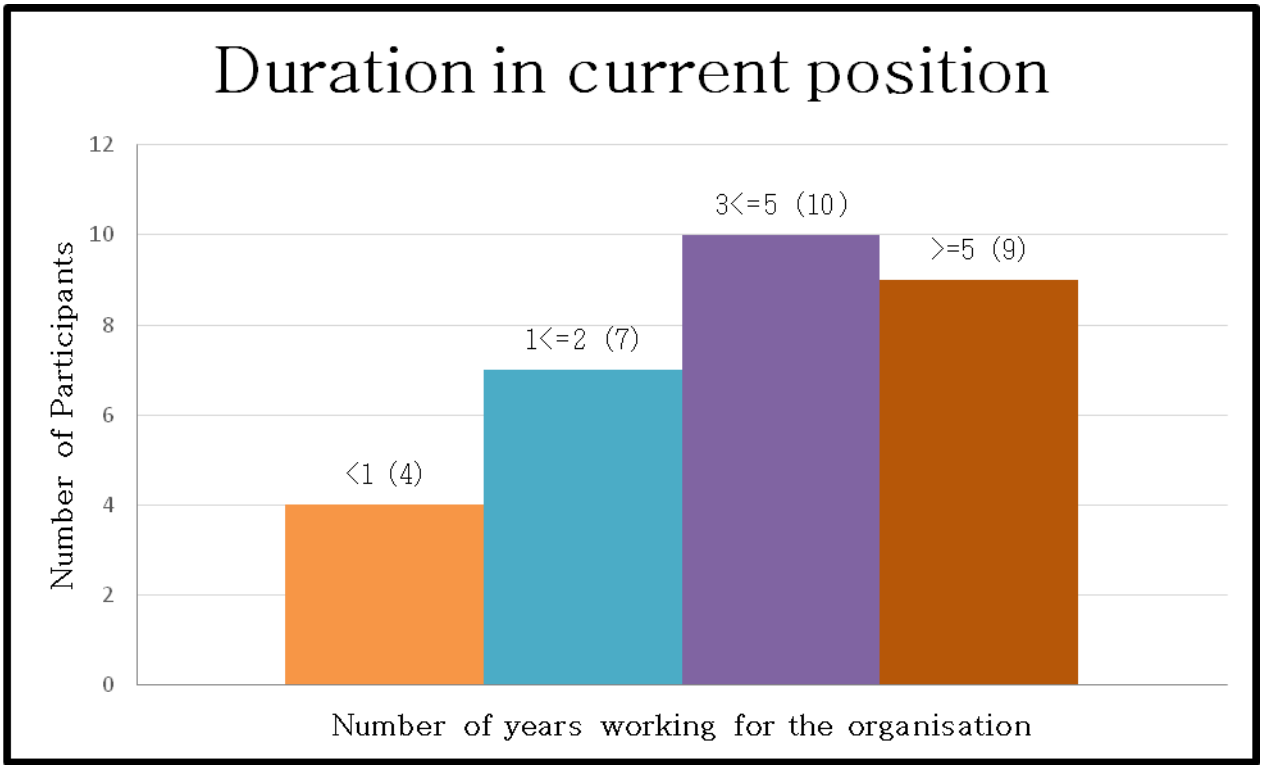


Figure 11: Duration of service in current position

4.4 THEMES

The researcher used thematic analysis and followed Braun and Clarke's (2006) six stages of conducting thematic analysis. For the first stage, which entails familiarising one-self with the data, the researcher transcribed the data collected from the questionnaires and semi-structured interview responses of each participant, read and re-read the transcripts at least twice and jotted down initial

thoughts and ideas (Braun & Clarke, 2006). Microsoft Office Excel 2010 (data analysis) software was used as a tool for analysis. The transcripts were uploaded to the program and an analysis was conducted to pull out the significant language, patterns and themes that were discovered throughout the participants' interview and questionnaire transcripts.

After the initial stage, initial codes were generated by building on the notes and ideas developed through transcription and data immersion. The codes identified features of the data that the researcher considered pertinent to the research question. The whole data set was given equal attention so that full consideration could be given to recurring patterns in the data. The initial codes developed are displayed in Table 7.

Table 7: Initial codes

INITIAL CODES	
Tacit knowledge	Financial indicators
Implicit knowledge	Knowledge management
Knowledge management processes	Knowledge management creation
Knowledge management sharing	Knowledge management storage
Knowledge management transfer	Organisational learning
Organisational culture	Knowledge management technologies
People	Incentives
Trust	Strategy
Innovation	Employee learning
Organisational performance	Organisational objectives

The third stage entailed searching for themes by analysing and sorting the codes to identify themes. All the initial codes relevant to the research question were incorporated into themes. Braun and Clarke (2006) proposed the development of thematic maps to support the generation of themes. These helped the researcher visualise and consider the links and relationships between themes. The themes were fine-tuned using a two-level analysis of the code, firstly by ensuring that the coded data formed a coherent pattern and secondly by reading through the entire data set to ensure the

themes fit in relation to the data set as a whole. This confirmed that the themes correctly reflected what was evident in the data set as a whole (Braun & Clarke, 2006). Further coding was also done to ensure that no codes had been missed in the earlier stages by the researcher.

After the researcher had developed a clear idea of the various themes and how they fit together, defining and naming of the themes as well as a detailed analysis of each theme followed. Care was taken to define the themes clearly and to determine how these related to the overall story that was evident from the data. The researcher focused on naming each theme by identifying the essence of the theme and determining the aspect of the data and research questions into which the theme fit. The final stage of producing the report entailed coming up with a thick description of the results in a way that would convince readers of the efficacy and value of the analysis (Braun & Clarke, 2006; Maguire & Delahunt, 2017). The write-up was not a mere description of the data, but a compelling analytical narrative demonstrating the story being told by the data. It was an argument in relation to the research question of how KM can be applied as an organisational tool in the electricity supply industry. The thematic analysis process that was applied to the transcripts elicited the key concepts, thus themes that were evident in the data.

These themes were essential in determining the perceptions of all the participants. This portion provides a narrative of the themes constructed from the analysis of data to answer the central research question and research sub-questions. The themes were grouped into three main sections specific to the research questions, as shown in Figure 12: “Knowledge management”, “Knowledge management enablers and inhibitors” and “KM as an organisational tool”. Some aspects of the participants’ perceptions overlapped across these categories, such as KM technologies, which are both KM processes and an enabler or inhibitor of KM. This, however, should be viewed as a good interpretation of perceptions in general, which are never made up of isolated concepts, but are all relative to one another.

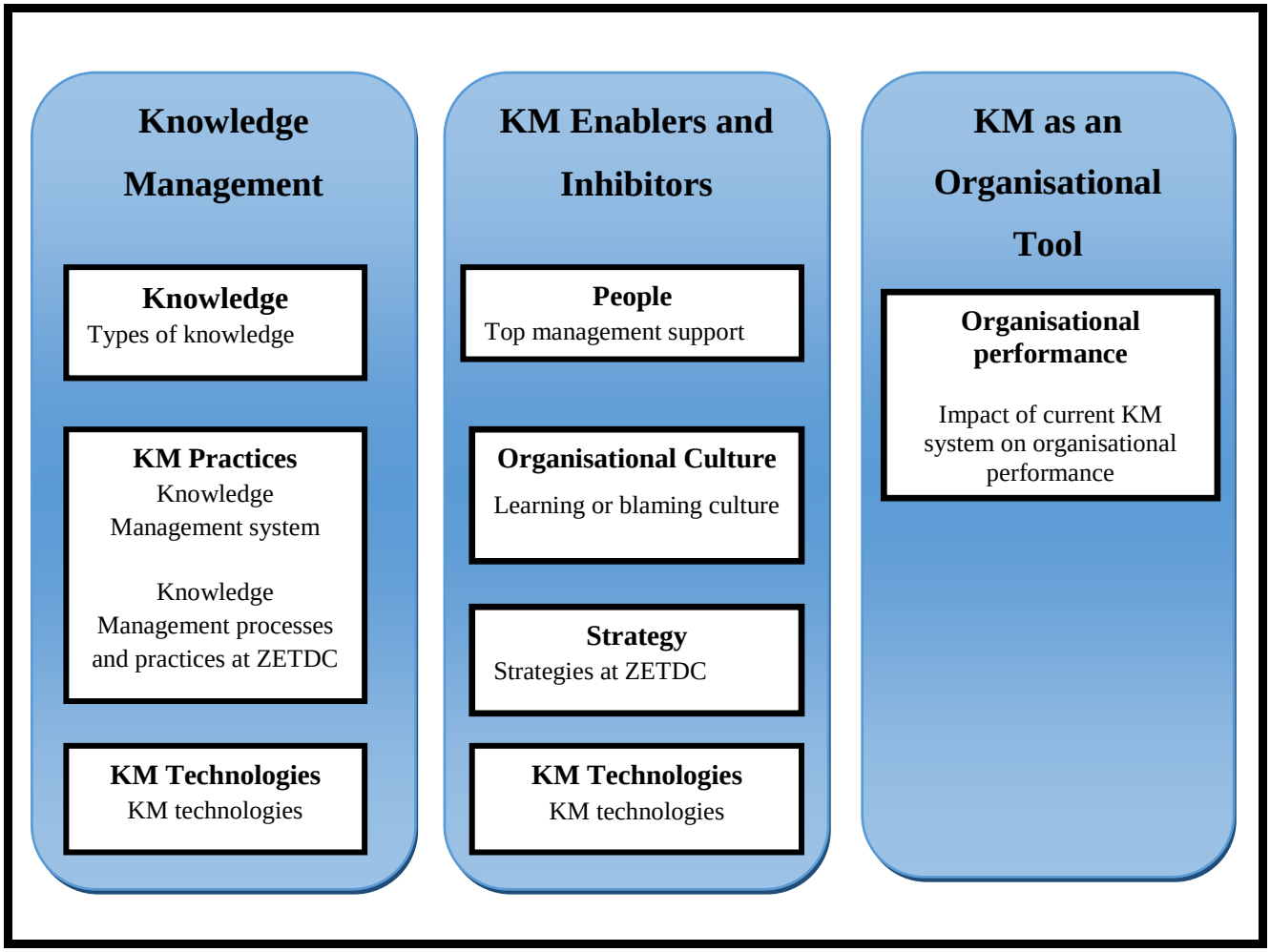


Figure 12: Themes

A discussion of the emergent themes and sub-themes shown in Figure 12 follows in Sections 4.5 and 4.6. The responses elicited from questionnaires and semi-structured interviews were presented and analysed separately, starting with the questionnaires.

4.5 QUESTIONNAIRE RESPONSE ANALYSIS

This section discusses the responses from the questionnaires, using the emergent themes and sub-themes depicted in Figure 12.

KNOWLEDGE MANAGEMENT

The KM theme answered the research questions that focused on the types of knowledge, general understanding of KM, current KM practices, KM system and KM technologies at ZETDC.

Knowledge, KM practices and KM technologies were the sub-themes that represented the KM theme. Each of these sub-themes is discussed in detail in the next sections.

4.5.1 KNOWLEDGE

Knowledge is power and it is a major support or deterrent to the accomplishment of any task or goal. This sub-theme focused on understanding the participants' perception of knowledge and the types of knowledge employed at ZETDC.

All the respondents strongly agreed that they use knowledge, which is understanding obtained from past knowledge, experience, reasoning, intuition and learning, to achieve organisational objectives, as shown in Table 8.

Table 8: Knowledge

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you make use of the understanding that you acquire from past knowledge, experience, reasoning, intuition and learning to achieve organisational objectives?	25 (100%)				

Respondents were further asked if they used knowledge shared formally that is documented in books and manuals among others, as well as knowledge that resides in the human mind, behaviour and perceptions, which is personal and context-specific and can only be transferred through interaction. According to Table 9, all respondents confirmed that they used both implicit and tacit knowledge in carrying out their day-to-day duties.

Table 9: Types of knowledge used

What type of knowledge do you use to carry out your day-to-day operations?	Responses	
Knowledge that is personal and context specific that resides in the human mind, behaviour and perception and can only be transferred through interaction.	0	0%
Knowledge that is recorded and shared effortlessly, which is documented in books and manuals among others and shared formally.	0	0%
Both of the above.	25	100%
Others; please specify	0	0%

KNOWLEDGE MANAGEMENT PRACTICES

This sub-theme delved into the respondents' general understanding of KM and the KM system as well as the KM processes and practices at ZETDC.

4.5.2 KNOWLEDGE MANAGEMENT SYSTEM

This sub-theme focused on gaining insight into participants' understanding of KM, as well as determining if a KM system existed at ZETDC.

The following question was asked to establish the participants' perception of KM:

Question: What is your definition of knowledge management?

The respondents gave the following responses:

Z1: "…a process of information technology that acquires, stores and retrieves knowledge to achieve the organisation's objectives"

Z5: "…policies, procedures and practices related to the acquisition, preservation, retrieval and use of knowledge to achieve the company's objectives"

Z10: "…way in which knowledge is acquired, stored and retrieved for current and future use".

Participants placed emphasise on the acquisition, storage and retrieval of knowledge to achieve the organisation's objectives. Others mentioned the use of technology in the creation, sharing, storage and retrieval processes.

To determine whether a KM system exists participants were asked the following question:

What mechanisms are used to manage past knowledge and experience within your organisation?

Their responses were:

Z1: "Manual record keeping but not really sure how it is done"

Z8: "A manual system of documenting past knowledge or procedures in manuals is used and kept in the registry"

Z14: "A manual knowledge management system of record keeping eg manuals is used and stored in the registry at the head office"

Z19: "A manual system is used however, it is not formal"

Z22: "A manual system of documenting knowledge and procedures into manuals"

As indicated the responses above, ZETDC has a manual system in place. However, ten of the 25 participants were not really sure how the system works or where past knowledge is stored.

To determine the effectiveness of the overall current KM system, thus the strategies, processes and technology, participants were asked the question shown in Table 10. In responding, 64% of the participants disagreed, while 24% were neutral and the remaining 12% agreed that an overall KM system exists at ZETDC, which leverages the organisation's critical information and expertise with the aim of improving company productivity and decision quality throughout the organisation.

Table 10: Knowledge management at ZETDC

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you have the strategies, processes and technologies used to acquire, select, organise, share and leverage an organisation's critical information and expertise with the aim of improving company productivity and decision quality?		3 (12%)	6 (24%)	16 (64%)	

KM PROCESSES AND PRACTICES

This sub-theme investigated the current KM processes and practices at ZETDC to identify their strengths and weaknesses. It also looked at the causes of the weaknesses, as well as ways to address them. Knowledge creation, knowledge sharing/transfer and knowledge storage were discussed.

4.5.3 KNOWLEDGE CREATION

According to Table 11, when asked if they were involved in the creation of knowledge, 48% agreed that they were involved, while 20% responded neutrally and the remaining 32% disagreed. Nine of the 25 respondents agreed, five were neutral and eleven disagreed that top management takes active interest in knowledge creation and supports it continuously. When asked whether well-defined processes for creating, capturing and acquiring knowledge exist at ZETDC, 52% disagreed while 24% were neutral and the remaining 24% agreed.

Table 11: Knowledge creation

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Everyone is involved in the creation of knowledge and everybody contributes to it		12 (48%)	5 (20%)	8 (32%)	

Top management takes an active interest in knowledge creation and supports it continuously.		9 (36%)	5 (20%)	11 (44%)	
ZETDC has well-defined processes for creating, capturing and acquiring knowledge		6 (24%)	6 (24%)	13 (52%)	

Participants were asked:

How can knowledge creation be improved?

They gave the following responses:

Z1: "…continuous development of personnel, continuous training and giving employees financial or non-financial incentives to improve knowledge creation."

Z4: "…adoption of current technologies or systems and cultivating an open, transparent culture or work environment that empowers, promotes organisational learning and encourages knowledge creation."

Z8: "…make it a strategic issue which needs to be consciously managed and employees should be involved in knowledge creation and their contributions should be valued."

Z12: "…hiring new employees or experts from competitors or industrial networks improve knowledge creation."

Z16: "…promoting teamwork, support from top management, and rewarding employees for innovation or new ideas."

Z17: "…transfer of skills from experienced employees to incoming subordinates."

Z18: "…adoption of a knowledge management strategy that supports the organisation's goals and objectives."

Z22: "…providing employees with the relevant data and information timeously and having a research and development section responsible for researches and new ideas."

Participants concurred that the organisation should involve and allow employees to participate in knowledge creation. In addition, three participants elaborated that the organisation must make knowledge creation a strategic issue. Furthermore, it should empower and encourage employees to be innovative. Seven participants encouraged the organisation to create a transparent environment and culture that encourages knowledge creation. Moreover, it can be improved through encouraging teamwork whereby employees are tasked to come up with new ideas and the teams with the best ideas get a reward. This would increase trust among employees and promote knowledge sharing. Another respondent suggested that the research and development section in the organisation should be responsible for conducting research and generating new ideas. Four participants said the organisation should timeously provide employees with relevant information and data that they can use in creating knowledge and for decision-making.

4.5.4 KNOWLEDGE SHARING AND TRANSFER

This sub-theme examined participants' perception of the knowledge sharing/transfer process. According to Table 12, 24% agreed, 20% were neutral and 56% disagreed that the organisation has an open, encouraging and supportive culture that promotes the sharing of knowledge, employee learning, critical thinking and risk-taking with new ideas at ZETDC. Furthermore, Table 12 depicts that 48% agreed, 20% were neutral and 32% disagreed that people in the workplace share their experiences and knowledge willingly.

Thirteen of the 25 participants strongly disagreed, eight disagreed and four were neutral when asked whether ZETDC provides incentives for knowledge sharing. Participants were asked if ZETDC has formal channels such as meetings, courses and tours for sharing knowledge; 72% agreed, 16% were neutral and the remaining 12% disagreed. When asked about trust, reciprocity and openness among participants are important elements for knowledge sharing or transfer, 68% strongly agreed, while 32% agreed as illustrated in Table 12.

Table 12: Knowledge sharing and transfer

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

Do you have an open, encouraging and supportive culture that promotes the sharing of knowledge, employee learning, critical thinking and risk-taking with new ideas at ZETDC?		6 (24%)	5 (20%)	14 (56%)	
People in the workplace share their experiences and knowledge willingly.		12 (48%)	5 (20%)	8 (32%)	
Does ZETDC provide incentives for knowledge sharing?			4 (16%)	8 (32%)	13 (52%)
Formal channels for knowledge sharing exist such as meetings, courses and tours.		18 (72%)	4 (16%)	3 (12%)	
Trust, reciprocity and openness among participants are key elements for knowledge transfer.	17 (68%)	8 (32%)			

Participants were asked the following question regarding limitations on knowledge sharing:

What are the limitations on knowledge sharing and transfer at ZETDC and how can knowledge sharing be improved in your organisation?

Respondents gave similar answers, so their responses were summarised and displayed in Table 13.

Table 13: Limitations on knowledge sharing

Limitations on knowledge sharing and transfer at ZETDC
• Lack of training • Lack of interaction and engagement. • Inadequate support from top management. • Resource constraints. • Inadequate technologies to enhance knowledge sharing.

- Lack of incentives.
- An unsupportive organisational culture.
- Financial constraints.
- Inadequate access to knowledge or resources.
- Absence of knowledge sharing software.
- Fear, lack of confidence and trust among employees.
- Lack of interest.

Participants were asked how knowledge sharing and transfer could be improved at ZETDC. Respondents recommended the creation of an open and favourable culture or environment that allows employees to share and transfer knowledge freely. They encouraged ZETDC's top management to be supportive and provide resources that support knowledge sharing and transfer. Furthermore, creating open, clear and transparent communication improves knowledge sharing, as employees develop a sense of trust and freely express their ideas, thus contributing to success. Respondents urged the organisation to provide incentives, adopt software, technologies or systems and adequate resources that support knowledge sharing or transfer.

Knowledge transfer or sharing can be improved by ensuring that employees know what knowledge or resources are available to them and how they can access these by creating shared folders so that anyone anywhere can access that knowledge. It can be improved by creating an environment that recognises the existence and value of knowledge and deliberately encourages its sharing. Respondents suggested that knowledge sharing can be improved within the organisation through training, mentoring and hosting frequent indabas and refresher courses with skilled personnel where information is exchanged. They further explained that ZETDC should encourage and support employees to share knowledge as well as create an environment that recognizes the existence and value of knowledge. Some respondents recommended the creation of a knowledge portal on the organisation's web portal.

4.5.5 KNOWLEDGE STORAGE

According to Table 14, 52% strongly disagreed and 32% disagreed that stored knowledge is quite important, relevant and up to date and that some of the procedures are documented and stored centrally for ease of access across the organisation. The remaining 16% were neutral.

Table 14: Knowledge storage

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Stored knowledge is quite important, relevant and up to date; furthermore, procedures are documented and stored centrally for ease of access across the organisation.			4 (16%)	8 (32%)	13 (52%)

Respondents were asked to comment on the storage of knowledge at ZETDC. They said the following:

Z1: "Not all business processes are documented or have documented procedures hence there is need to adopt current technologies to store that knowledge."

Z3: "The organisation's historical knowledge is not always up to date and it is not easily accessible to everyone."

Z7: "The company should establish an electronic national database that is accessible to anyone from anywhere and improve on the storage of knowledge by adopting current technologies or systems."

Z10: "…encouraged the organisation to adopt current technologies or systems of knowledge storage."

All participants complained that the stored knowledge is not always up to date and recommended the use of an electronic system for storing knowledge that is easily accessible. Furthermore, the organisation should adopt current technologies or software to improve knowledge storage. Eight respondents suggested the use of a knowledge portal that is accessible to relevant employees from

anywhere at all times, unlike the current manual system of knowledge storage, which is not easily accessible and not up to date.

4.5.6 KNOWLEDGE MANAGEMENT TECHNOLOGIES

KM technology is very important in the implementation of KM. It is both a KM process and an enabler or inhibitor of successful KM implementation. Two themes in this sub-theme overlap, namely KM and KM enablers or inhibitors. This sub-theme examined the current KM technologies at ZETDC, as well as channels that participants would prefer to use.

As shown in Table 15, 64% of the participants disagreed, while 20% were neutral and the remaining 16% agreed that the overall KM system leverages an organisation's critical information and expertise with the aim of improving company productivity and decision quality throughout the organisation at ZETDC. Furthermore, 20% of the respondents concurred that current technologies within the organisation promote the reach and scope of exchanging knowledge among individuals to enhance organisational performance, while 8% were neutral and the remaining 72% disagreed. Although 60% of the respondents disagreed that the hardware and software technologies available support employee learning, 12% were neutral, while 28% agreed.

Table 15: Knowledge management technologies

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you have the strategies, processes and technologies used to acquire, select, organise, share and leverage an organisation's critical information and expertise with the aim of improving company productivity and decision quality?		4 (16%)	5 (20%)	16 (64%)	
The current technologies used in the organisation promote the reach and scope of exchanging information among individuals		5 (20%)	2 (8%)	18 (72%)	

or groups to enhance organisational performance.					
Hardware and software technologies are available to support employee learning.		7 (28%)	3 (12%)	15 (60%)	

Table 16 depicts various KM channels that could be used to acquire knowledge and information. A Likert scale with five options, namely strongly preferred, preferred, neutral, little preferred and least preferred, was used to enable respondents to rank the channels they would prefer to use to obtain information. In terms of the internet, Table 16 (a) reveals that six respondents strongly preferred particular channels, while twelve preferred them and seven's preference was low. The intranet was strongly preferred by five, preferred by sixteen and least preferred by four participants, as shown in Table 16 (b). The intranet is an easy way of communicating. For customer relationship management, three respondents preferred this, while ten were neutral and 12 had a low preference for it, as shown in Table 16 (c). The management information systems were strongly preferred by four respondents and preferred by sixteen, while the remaining five were neutral, as shown in Table 16 (d).

Table 16: Knowledge management channels

Channel	Strongly preferred	Preferred	Neutral	Little preferred	Least preferred
a. Internet	6	12		7	
b. Intranet	5	16		4	
c. Customer Relationship Management		3	10	12	
d. Management Information System	4	16	5		
e. Expert Networks	16	9			
f. E-mail	6	11	3	5	
g. Video Conferencing	9	11	5		
h. Data Warehousing	6	15	4		

i. Browsers		5	3	8	9
j. Content Management		6	11	5	3
k. Knowledge Portals	18	4		3	
l. Data Support Systems		8	11	6	
m. E-learning	10	7	3	5	
n. Groupware	5	10	3	4	3
o. Data Management System		16	4	5	
p. Community of Practices	9	11		5	
q. Story-telling		8		6	11

According to Table 16 (e) sixteen participants strongly preferred expert networks while nine preferred these. Email used in communication was useful in transmitting tacit knowledge, as six of the respondents strongly preferred it, eleven preferred it, three were neutral and five had little preference for it, as displayed in Table 16 (f). Email needs to be encouraged in view of its ease of use and pervasive nature. As shown in Table 16 (g), video conferencing was strongly preferred by nine and preferred by eleven, but the remaining five were neutral. Data warehousing was strongly preferred by six, preferred by fifteen and the remaining four were neutral, as displayed in Table 16 (h). Five respondents preferred the use of browsers, three were neutral, eight had little preference for it and nine indicated the least preference for it, as illustrated in Table 16 (i). According to Table 16 (j), six respondents preferred the use of content management, eleven were neutral, 5 had little preference for it and three indicated the least preference for it.

Knowledge portals were deemed useful in knowledge sharing, as indicated by eighteen respondents who strongly preferred these, while respectively four and three had little or the least preference for it. Knowledge portals must be adopted and useful articles contributed, as revealed in Table 16 (k). The use of a data support system was preferred by eight respondents, 11 were neutral and six had the least preference for it, as shown in Table 16 (l). E-learning was supported by respectively ten and seven respondents who strongly preferred or preferred it, three were neutral and five had the least preference for it, as displayed in Table 16 (m). As shown in Table 16 (n), groupware was

strongly preferred by five, preferred by 10 and three were neutral, while respectively four and three had little preference for it and the least preference for it. Sixteen respondents said they preferred using a data management system, four were neutral and five had the least preference for it, as shown in Table 16 (o). The community of practice given in Table 16 (p) was strongly preferred by nine, preferred by 11 and least preferred by five. Lastly, story-telling was preferred by eight, little preferred by six and 11 showed the least preference, as displayed in Table 16 (q).

Respondents were asked to specify the currently used KM channels at ZETDC. All the participants asserted that they used the following KM technologies channels: electronic mail, WhatsApp groups, formal company meetings and workshops for official or formal communication purposes. They also used these channels to obtain up-to-date information on the state of the organisation. A scale of 1 to 9 was used to rate the current technology infrastructure at ZETDC, with 1 being poor and 9 being excellent. Of the 25 participants, 11 gave a rating of 5, five a rating of 6 and the remaining nine a rating of 4.

KM ENABLERS AND INHIBITORS

KM enablers are crucial elements that determine the success of an organisation in implementing KM. Failure to take these enablers into account inhibits the successful execution of KM. The sub-themes of the KM enablers and inhibitors theme used to answer the questions regarding enablers and inhibitors of KM were people, strategy, IT, organisational culture and learning. The IT sub-theme was discussed above under the KM theme.

4.5.7 PEOPLE

People are indispensable players in KM as they are the inventors and users of knowledge (Nonaka, 1994). They are the organisation's major assets, as knowledge resides in them, moves between them and benefits people, not machines. As displayed in Table 17, three participants strongly agreed, four agreed, three were neutral, nine disagreed and six strongly disagreed that they felt that they were hired, evaluated and compensated for their contribution to the organisation's knowledge.

Table 17: People

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you feel as if you are hired, evaluated and compensated for your contributions to the development of the organisation's knowledge?	3 (12%)	4 (16%)	3 (12%)	9 (36%)	6 (24%)

Twenty of the 25 participants stated that they were not eager to create, share or transfer their knowledge because there was no motivation to do so; 90% of the respondents recommended the introduction of incentives as a motivational tool for the creation, sharing and transfer of knowledge, as well as encouraging and supporting employees to learn and share knowledge.

4.5.8 ORGANISATIONAL CULTURE AND LEARNING

Organisational culture and learning are enablers or inhibitors of KM. This sub-theme investigated the current corporate culture and organisational learning at ZETDC to establish if it encourages knowledge creation, sharing and transfers. Table 18 depicts the participants' response to questions on organisational culture and learning. When asked whether ZETDC has an open, encouraging and supportive culture that promotes the sharing of knowledge, employee learning, critical thinking and risk taking with new ideas, 52% of the respondents disagreed, 24% were neutral and 24% agreed. In answer to a question on whether the organisation's culture permits them to make mistakes or value their contributions while learning from experimenting and experience, 28% agreed, 12% were neutral and the remaining 60% disagreed.

Table 18: Organisational culture and learning

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you have an open, encouraging and supportive culture that promotes the sharing of knowledge, employee learning, critical		6 (24%)	6 (24%)	13 (52%)	

thinking and risk-taking with new ideas at ZETDC?					
The organisation's culture permits employees to make mistakes and value their contributions while learning from experimenting and experience.		7 (28%)	3 (12%)	15 (60%)	
There are clear operational guidelines to help staff learning and encourage people to participate in a variety of informal learning opportunities		9 (36%)	3 (12%)	13 (52%)	
Hardware and software technologies are available to support employee learning.		6 (24%)	4 (16%)	15 (60%)	
Policies or programmes intended to improve worker retention exist.		9 (36%)		16 (64%)	
The corporate culture affects worker retention.	17 (68%)	8 (32%)			

Although 52% of the participants claimed that there were no clear operational guidelines to help staff learning or to encourage people to participate in a variety of informal learning opportunities, 36% agreed and 12% were neutral. Participants were asked if the hardware and software technologies currently available support employee learning; 24% agreed, 16% were neutral and the remaining 60% disagreed. Asked whether policies and programmes intended to improve worker retention exist, 36% agreed while 64% disagreed. When asked if corporate culture affects worker retention, 68% strongly agreed, while 32% agreed.

The respondents were asked to suggest ways to improve organisational learning and corporate culture at ZETDC.

How can employee learning be improved at ZETDC?

They gave the following responses:

Z3: “Continuously offer skills enhancement to employees to keep abreast with technology and market changes.”

Z6: “Develop an environment that permits employees to make mistakes while learning and value their contributions.”

Z9: “Give employees adequate resources to enable them to learn such as internet for research purposes.”

Z11: “Encourage employees to continuously develop themselves and make learning flexible and accessible to all employees.”

Z17: “Set clear guidelines to help staff learning and adopt technologies that support employee learning.”

Respondents advised the organisation to create a good working environment where organisational goals are congruent with individual goals. Furthermore, they encouraged management to “walk the talk” and display professionalism and empathy. A respondent stated that critical skills should be given a waiver; for instance, they should be allowed to work past retirement age. Respondents advised ZETDC to relate training needs to actual staff development initiatives to enhance organisational learning. They also recommended setting clear guidelines to help staff learning and giving employees adequate resources, such as the internet, to enable them to learn. In addition, ZETDC should create a culture that permits employees to make mistakes while learning, value employees’ contributions and host training, workshops, meetings and in-house courses.

Participants are asked the following question regarding corporate culture:

How can corporate culture be improved to maintain employee retention?

Below were their responses:

Z14: “Promote transparency and open communication. Practising empathy on all employees.”

Z17: “Create a culture that empowers and encourages employees to work hard.”

Z8: "Have an open door policy that allows employees to feel free and contact you when they have a problem."

Z21: "Make the work environment friendly by providing employees with adequate resources to do their jobs and setting clear job expectations."

Z22: "…creating a corporate culture that promotes trust and establish strong team relationships."

Organisational culture can also be improved by providing resources for learning, making learning flexible and accessible to all employees and valuing employees' contributions. ZETDC should adopt policies that promote employee retention and encourage employees to develop themselves continuously. Another respondent recommended the use of coaching and mentorship programmes that encourage the mentee to become a mentor, as well as remunerating and rewarding employees and giving them awards.

4.5.9 STRATEGY

Wu (2008) states that a unique and proper KM strategy which is based on the company's strategy is required to manage knowledge effectively. The KM strategy must be connected to the organisational strategy to execute KM successfully. As shown in Table 19, participants were asked if ZETDC has a strategy to acquire, select, organise, share and leverage the organisation's critical information and expertise with the aim of improving company productivity and decision quality; 16% agreed, 20% were neutral and 64% disagreed.

Table 19: Strategy

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you have the strategies, processes and technologies used to acquire, select, organise, share and leverage an organisation's critical information and expertise with the aim of improving		4 (16%)	5 (20%)	16 (64%)	

company productivity and decision quality?					

4.5.10 KM AS AN ORGANISATIONAL TOOL

KM is critical for an organisation's survival and growth because it drives organisational performance. This theme answers the question on how ZETDC can achieve the benefits of KM. This theme looked at the impact of the current KM system and practices on organisational performance as well as ways to improve the application of KM as an organisational tool in the electricity supply industry so that it enjoys the benefits of KM.

According to Table 20, 16% agreed, 20% were neutral and the remaining 64% disagreed that ZETDC has strategies, processes and technologies to acquire, select, organise, share and leverage an organisation's critical information and expertise with the aim of improving company productivity and decision quality.

Table 20: Organisational performance

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you have the strategies, processes and technologies used to acquire, select, organise, share and leverage an organisation's critical information and expertise with the aim of improving company productivity and decision quality?		4 (16%)	5 (20%)	16 (64%)	
The current technologies used in the organisation promote the reach and scope of exchanging information among individuals or groups to enhance organisational performance.		5 (20%)	2 (8%)	18 (72%)	

Respondents were asked if the current technologies used in ZETDC promote the reach and scope of exchanging information among individuals or groups to enhance organisational performance; 20% agreed, 8% were neutral and the remaining 72% disagreed.

4.6 SEMI-STRUCTURED INTERVIEW RESPONSE ANALYSIS

The main themes were explained earlier in Section 4.5, so sub-themes were used to discuss the responses from the semi-structured interviews.

4.6.1 KNOWLEDGE

Participants were asked if their organisation relies on historical knowledge and experience for its day-to-day operations. All the participants answered affirmatively and agreed that they used both tacit and implicit knowledge.

4.6.2 KM PRACTICES

This sub-theme focused on the KM system and KM processes and practices at ZETDC.

To get insight into the participants' perception of KM, the researcher asked the following question:

What is your definition of knowledge management?

Below are their responses:

Z26: "…a process of information technology that acquires stores and retrieves knowledge to achieve the organisation's objectives."

Z27: "…policies, procedures and practices related to the acquisition, preservation, retrieval and use of knowledge to achieve the company's objectives."

Z28: "…The way in which knowledge is acquired, stored and retrieved for current and future use."

Z29: "…refers to how knowledge is acquired, stored and retrieved for current and future use."

Z30: "…the processes and procedures used to create, share and manage knowledge."

As is evident from the above responses all the respondents concurred that KM entails knowledge creation, sharing, transfer and storage. The participants' responses conform to the definitions given by the participants who responded to the questionnaires referred to above.

In order to comprehend the KM system at ZETDC the following question was asked.

Do you have a knowledge management system in place?

Z26: "Yes, an informal knowledge management system exists."

Z27: "Yes, a manual KM system exists and hard copies of documents and manuals are kept in the registry."

Z28: "Yes, a system exists but I am not sure how it works."

Z29: "Yes, but I do not know how it works."

Z30: "There is a manual KM system whereby hard copies of documents and manuals are kept in the registry."

According to the responses above all the participants agreed that a KM system exists at ZETDC. One respondent stated that there is an informal KM system, while two respondents concurred that a manual KM system exists. While two participants explained that hard copies of documents and manuals of the KM system are kept in the registry section, two respondents said that they were not sure of how the system works.

To gain insight into the challenges of the current KM system, the following question was asked:

What are some of the challenges of the current knowledge management system?

Z26: "The system is not a true reservoir of knowledge because some of the knowledge or procedures are difficult to document, as they can only be shared through observation or interaction"

Z27: "it does not promote the grooming of future employees nor allow proper hand-over and take-over from the experienced employees to non-experienced employees. For instance, a skilled retiree just leaves the

company without transferring their knowledge because there is no system or way to trace if they transferred their skills to other employees and this often harms the organisation in that those that come do not have the experience or skills hence perform their duties on a trial and error basis."

Z28: "The system is not always up to date and not all procedures are documented."

Z29: "The system in place does not document all the knowledge; for instance tacit knowledge which is difficult to put in writing."

Z30: "The current KM system is not easily accessible or up to date. Creation, sharing or transfer of knowledge is difficult, especially for experienced employees who get frustrated when someone is promoted because of their qualification even if they do not have experience over them."

Based on the responses above, the main challenges of the current KM system include failure to record all the knowledge, especially tacit knowledge, which is difficult to record, employee frustration due to HR policies and procedures, which hampers the sharing and transfer of knowledge, as well as inaccessible and outdated knowledge. The challenges outlined here were similar to those mentioned in the questionnaire responses.

Participants were asked to come up with suggestions for how the current KM system can be improved:

How can it be improved?

Below are their responses:

Z26: "It can be improved by making use of current technologies. Transfer of knowledge and skills should be put on the performance appraisals under key result areas (KRA) to be effective so that comparisons can be made between the targets and actual results."

Z27: "…can be improved by making the current KM system electronic, recognising and valuing as well as motivating employees to create, share and transfer knowledge."

Z28: "The organisation should make use of an electronic system and encourage knowledge creation, sharing and transfer."

Z29: "The organisation should adopt other current technologies in the market and ensure it captures all the knowledge and that it is transferred and shared with all employees. A knowledge portal can also be implemented to improve knowledge sharing."

Z30: "It can be improved by motivating employees to create and share knowledge through monetary and non-monetary rewards, as well revision of HR policies of recruitment and promotion."

Participants recommended the adoption of an electronic KM system that is always up to date and easily accessible and use of current technologies to capture tacit knowledge and procedures that are difficult to put in writing. As suggested in Section 4.5, the organisation should value and motivate its employees to create, share and transfer knowledge, as well as keep experienced, skilled personnel on board and make sure their skills are transferred to incoming subordinates. Furthermore, the HR policies of recruitment and promotion should be revised.

To enable the researcher to comprehend the KM processes currently employed at ZETDC, participants were asked the following question:

How do you create, share, transfer, store and manage the historical knowledge and experience for day-to-day and future use?

Z26: "Knowledge is created through sharing ideas. Shared and transferred through on the job training, workshops. Stored in manuals and records."

Z27: "It is created through interacting with peers and sharing ideas, shared through trainings and workshops whereby employees exchange information, stored and managed through a manual knowledge management system in the form of manuals and procedures."

Z28: "…created through organisational learning. Knowledge is shared through workshops and trainings. Stored and managed using the KM system."

Z29: "Knowledge is created through organisational learning, transferred via apprenticeship and graduate trainee programs. It is stored within the individuals or recorded in manuals."

Z30: "Knowledge is created through sharing ideas. It is transferred through workshops and trainings. The manual KM system is used to store and manage historical knowledge."

The participants alleged that knowledge is created through sharing ideas, interacting with peers and organisational learning. Furthermore, it is shared or transferred through on-the-job training, workshops, apprenticeships and graduate trainee programmes whereby the employees exchange information and learn from their peers. The knowledge is stored within the individuals or recorded in manuals. The KM system is used to manage historical knowledge.

To understand the challenges faced in creating, storing, sharing and managing historical knowledge and experience at ZETDC, the following question was asked:

What are some of the challenges that you face in creating, storing, sharing and managing the historical knowledge and experience?

Below are their responses:

Z26: "Employees are not eager to share their knowledge because there are no incentives for that. This affects knowledge creation and sharing. The KM system used for storing and managing knowledge is not always up to date."

Z27: "People are the main challenges in the KM processes. The issue of salaries, incentives and lack of trust make them adamant to participate in knowledge creation and sharing activities. Some of the knowledge that is difficult to put in writing is hence difficult to store. Some of the historical knowledge and procedures are not quickly updated."

Z28: "The recruitment and promotion system in place affects knowledge creation, sharing and transfer in that when hiring or promoting employees the organisation considers qualifications more than one's experience. For instance a recent MBA graduate can be hired or promoted to a managerial post because they have a MBA degree, the employee with many years of experience in that particular field end up feeling frustrated and will not share their knowledge or experiences or take part in the creation and sharing of knowledge. If that graduate makes any mistake, it affects the organisation's operations."

Z29: "The culture at ZETDC does not motivate employees to create or share their knowledge. Employee's contributions are not valued especially for those who have not attained a certain level of education even if they have so much experience. The manual storage of knowledge in one place is risky for the organisation and it might experience a discontinued database in case of a natural disaster. Besides it is not always updated."

Z30: "Lack of incentives and poor infrastructure affects knowledge creation and sharing. Some of the knowledge cannot be easily coded into manuals or put in writing."

As shown above, the responses regarding challenges faced in creating, sharing, transferring, storing and managing knowledge from those interviewed were similar to those mentioned in responses to the questionnaires. The main challenges were lack of incentives, trust, poor organisational culture and inaccessibility of stored knowledge.

4.6.3 KM TECHNOLOGIES

To gain understanding of the effectiveness of the current infrastructure, the following question was asked:

Does your infrastructure promote innovation, creativity, knowledge sharing and learning?

Z26: "Infrastructure promotes innovation, creativity, knowledge sharing and learning but with limitations."

Z27: "To some extent, but there is need for improvement."

Z28: "Yes, but to a limited extend."

Z29: "No, it does not. The organisation needs to adopt current technologies in the market."

Z30: "Yes, but it should improve and adopt current technologies."

Participants in interviews and questionnaires echoed the same sentiments regarding the current KM technologies: that they need to embrace current technologies to remain competitive in the rapidly changing environment in which ZETDC operates.

4.6.4 PEOPLE

Participants agreed that people are the most important asset of the organisation because knowledge resides in them. The following responses from participants show how people affect the KM practices and processes, as well as the organisation's performance:

Z26: "Employees are not eager to share their knowledge because there are no incentives for that. This affects knowledge creation and sharing."

Z27: "People are the main challenges in the KM processes. The issue of salaries, incentives and lack of trust make them reluctant to participate in the organisation's activities."

Z28: "The recruitment and promotion system in place affects knowledge sharing and transfer in that when hiring or promoting employees the organisation considers qualifications more than one's experience. For instance a recent MBA graduate can be hired or promoted to a managerial post because they have a MBA degree, the employee with many years of experience in that particular field will end up feeling frustrated and will not share their knowledge or experiences. If that graduate makes any mistake, it affects the organisation's operations"

Z29: "The culture at ZETDC does not motivate employees to create or share their knowledge. Employees' contributions are not valued, especially for those who have not attained a certain level of education even if they have so much experience."

Z30: "Lack of incentives and poor infrastructure affects knowledge creation and sharing."

Respondents urged the organisation to provide incentives to motivate employees to participate in the various KM processes.

4.6.5 ORGANISATIONAL CULTURE

Participants agreed that the organisational culture affects knowledge creation, sharing, transfer and storage. Participants cited lack of trust and openness, poor infrastructure and technologies as the main challenges affecting organisational culture. One respondent claimed that top management is not supportive while another said that they do not have enough resources to carry out their duties. Two participants complained that the organisational culture does not promote learning, nor is there trust among employees to share ideas.

4.6.6 STRATEGY

Participants were asked the following question regarding strategy:

Does the organisation understand the revenue-generating potential of its knowledge assets and has it developed strategies for them?

Participants gave the following responses:

Z26: "It does. Not sure if there any strategies in place or being developed."

Z27: "I do not think so because knowledge management is not a priority at the moment."

Z28: "No, it does not. There are no strategies for its knowledge assets."

Z29: "I doubt because it is not a priority at the moment and there are no strategies for them."

Z30: "I am not aware."

Two respondents said they were not sure, one did not know, while two answered in the negative because KM is not a priority at the moment, hence there are no strategies for it. All respondents said managing employees' knowledge was not central to the organisation's strategy. Two participants further explained that knowledge management was not a priority for the organisation at the moment. According to Table 21, two participants said they would implement a KM strategy at all levels, while three said they would implement it at business level.

Table 21: Strategy

Question	Company Level	Business Unit/Division Level	Department level	At all levels
At which level of the organisation do you implement a knowledge management strategy?		3 (60%)		2 (40%)

All five participants said managing employees' knowledge was not central to the organisation's strategy. Two participants advised the organisation to adopt a KM strategy that supports the organisation's goals and objectives.

4.6.7 KM AS AN ORGANISATIONAL TOOL

Participants were asked if the organisation understood the revenue generating potential of its knowledge assets and all said they were ignorant of the benefits of KM. All respondents concurred that the organisation is not enjoying the benefits of KM at the moment and said that improving overall organisational performance was a major objective of KM. All participants stated that knowledge is not linked to the financial results of the organisation. Furthermore, the organisation does not have a specific set of indicators that includes both financial and non-financial indicators to manage knowledge. Two respondents advised the organisation to start focusing more strongly on knowledge development and management for a bright future. Another respondent recommended that the organisation should start focusing more on KM so as to sustain its operations in the future.

4.7 CONCLUSION

In this chapter a comparative account was presented of results that emerged from questionnaires and semi-structured interviews. Data analysis was used to establish, analyse and report patterns, trends or relationships in the collected data. This study employed thematic analysis and themes emerged ranging from the way KM is understood at ZETDC by the employees to an explication of KM practices and processes at ZETDC, as well as the enablers and inhibitors of KM and organisational

performance. Thematic analysis helped the researcher to capture and organise the collected data into meaningful patterns that answered the research questions.

According to the responses from the questionnaires the KM system and lack of strategy at ZETDC hinder the enhancement of organisational performance. The main inhibitors of knowledge creation, sharing and transfer include an arduous relationship between the sender and receiver, lack of trust, poor infrastructure and ambiguity of the knowledge itself. From the interview responses it can be noted that ZETDC is a knowledge based organisation whose survival relies heavily on the knowledge of its employees. Employee mobility or retirement would result in a hazardous knowledge drain because of the ineffective KM system, infrastructure and processes.

Respondents to both the questionnaires and semi-structured interviews expressed concern about the lack of a proper KM system and strategies to deal with succession issues, which are attributable to the organisation's incapacity to create, capture and share knowledge effectively with those remaining in the organisation. While this chapter focused on the presentation of findings, the next chapter dwells on data integration and its contribution.

5 DATA INTEGRATION AND CONTRIBUTION

5.1 INTRODUCTION

The purpose of this qualitative case study was to suggest ways to apply KM effectively as an organisational tool in the electricity supply industry so as to enjoy the benefits it brings. This chapter starts with an explication of the integration of KM activities and DCs, followed by the exposition of findings from the previous chapter. Finally, the chapter closes with a conclusion.

5.2 INTEGRATION OF KNOWLEDGE MANAGEMENT AND DYNAMIC CAPABILITIES

There is a connection between DCs and KM activities. Furthermore, DCs (Figure 7) are seen as combinations of KM processes (Nielsen, 2006). Therefore, KM activities can be clustered into DCs as depicted in Figure 13. The three DCs are sensing, seizing and transforming/managing threats. Knowledge development capability involves the creation and acquisition of new knowledge which is then captured and stored in a stock of knowledge. KM activities included in this capability are creation, acquisition and capturing, as illustrated in Figure 13.

Knowledge creation is responsible for the construction of fresh organisational knowledge, while knowledge acquisition is the assimilation of the latest knowledge from sources outside the organisation. Knowledge from the creation and acquisition processes is captured and stored in the stock of knowledge, as depicted in Figure 13. The knowledge recombination capability is applied where knowledge-based resources from the organisation's stock of knowledge are combined and integrated to form organisational capabilities.

The KM activities involved in this capability are knowledge assembly, sharing and integration. Knowledge assembly plays an important role in the development of organisational capability and it entails the production and gathering of the resources and knowledge-based resources that will be incorporated in the quest for organisational capability (Nielsen, 2006). Knowledge sharing ensures that knowledge is distributed to the crucial units in the organisation that need it. For each of the capabilities defined in Figure 13, the ZEDTC themes are mapped in red text.

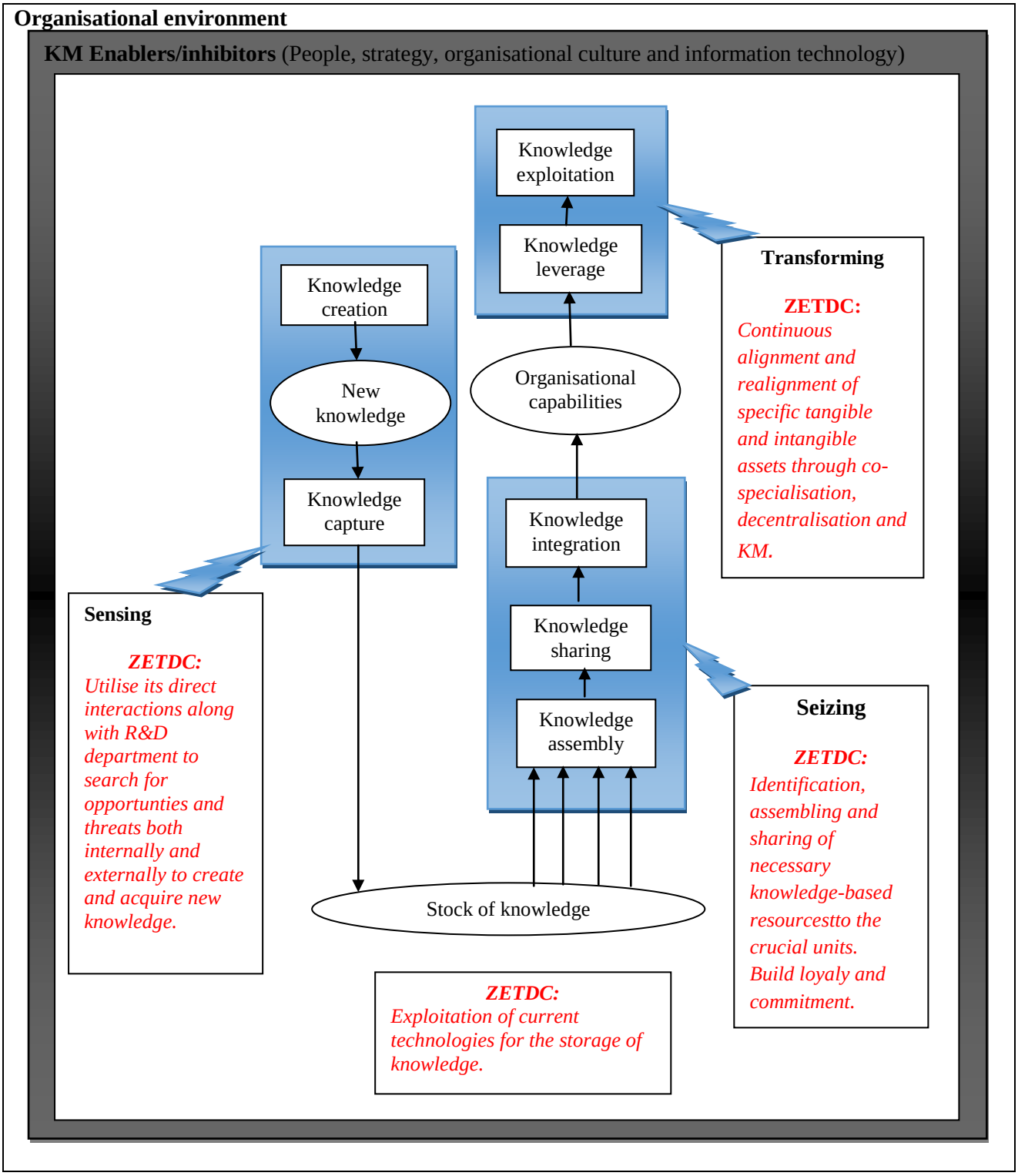


Figure 13: ZETDC's relation between knowledge management activities, stocks of knowledge, dynamic and organisational activities (adapted from Nielsen, 2006:68; Teece, 2007:1342)

Knowledge integration focuses on making the amassed knowledge resources work collectively to craft an organisational capability that forms the foundation for new products or services. Lastly, the knowledge use capability is applied where organisation use their existing and previously integrated knowledge resources in activities that generate value (Nielsen, 2006). The KM activities included in this capability are knowledge leverage, which involves searching for various new means to use the organisation's integrated knowledge based resources and knowledge exploitation, which entails using the organisational capabilities of the firm to create and deliver products and services to its customers (Grant, 1999b; Wang & Ahmed, 2004).

5.3 DISCUSSION OF THE FINDINGS

The study used questionnaires and semi-structured interviews as data collection methods. There was a 100% response rate for both questionnaires and semi structured interviews. Themes and sub themes emerging from the collected data were analysed using thematic analysis. Results from the data analysis showed that all four research sub-questions were prominent in answering the main research question: **How can knowledge management be applied as an organisational tool in the electricity supply industry in Zimbabwe**? The sub-questions were used to facilitate the discussion of findings. The research findings showed that addressing the inhibitors of KM and integrating DCs and KM activities would enhance the application of KM as an organisational tool. Figure 13, which illustrated the integration of KM activities and DCs, was used in applying KM as an organisational tool in the electricity supply industry.

The literature review showed that the ZETDC operates in an ever-changing environment, hence it should integrate its internal and external competencies to survive and sustain a competitive advantage. Integrating KM activities and DCs provides ZETDC with the opportunity to transform, replenish and utilise the organisation's knowledge-based resources continuously. This enhances organisational performance and survival in the ever changing environment in which the electricity supply industry operates.

5.3.1 WHAT ARE THE DIFFERENT TYPES OF KNOWLEDGE EXISTING AT ZETDC?

The data concurs with the literature review which states that knowledge is very important in the 21st century, organisations' most treasured assets are their knowledge assets. The findings confirm that ZETDC is a knowledge-based organisation, which relies heavily on its employees' prior knowledge and experience for its running. As illustrated in Section 2.2, two types of knowledge exist, namely tacit and explicit knowledge. Sections 4.5.1 and 4.5.6 confirm that ZETDC utilises both tacit and explicit knowledge; however, it experiences challenges in managing tacit knowledge, which is difficult to formalise, as it resides in the human mind, behaviour and perceptions. It was also noted that failure to manage the two types of knowledge especially tacit knowledge, would result in ZETDC suffering knowledge drain. As discussed in Section 2.2 of the literature review, ZETDC requires the special skills and practice necessary for effective management of tacit knowledge, which can only be transferred through interaction.

5.3.2 WHAT TOOLS AND TECHNIQUES ARE USED FOR KM AT ZETDC?

This question looked at the KM system and processes currently being utilised at ZETDC. Data findings shown in Sections 4.5.1 and 4.6.1 confirm that ZETDC is a knowledge-intensive organisation. Moreover, KM is crucial for its survival, as it is on the verge of losing knowledge from employee retirements and employee mobility. This knowledge must be recorded for future use so that future generations do not repeat mistakes and reinvent knowledge, as shown in Section 2.3. Effectively managing knowledge can result in huge savings, noteworthy progress in human performance and competitive advantage. KM is important for competitive differentiation among organisations because it improves an organisation's ability to be innovative, thus distinguishing itself from its rivals and attaining a competitive advantage. Section 2.4 states that KM utilises people, processes and technology to leverage knowledge. Therefore, ZETDC can secure and preserve its competitive position in the market place by becoming innovative.

As pointed out in Sections 4.5.2, 4.5.3 and 4.6.2, all participants concurred that the organisation uses a manual KM system that is not always up to date or easily accessible. They recommended the

use of an electronic KM system that is easily accessible from anywhere and always up to date. As stated in Section 2.3, effective KM relies on processes that augment individual and organisational aptitude, motivation and opportunities to learn, obtain knowledge and perform better so as to gain a competitive advantage. From Sections 4.5.2, 4.5.3, 4.5.4, 4.5.5 and 4.6.2 it was noted that the KM system and knowledge processes currently being used at ZETDC, which include knowledge creation, sharing and storage, are not effective. The employees are not fully involved in the knowledge creation process and the top management is not supportive, as evidenced in Table 14. This affects innovation and knowledge creation. Lack of trust, a poor corporate culture and lack of incentives, among other factors have proven to have a negative impact on both knowledge creation and capturing, as shown in Sections 4.5.6 and 4.6.4. Currently, knowledge is created through sharing ideas, organisational learning and exchange of information through workshops and training.

According to Sections 4.5.6 and 4.6.4, experienced and skilled employees leave the organisation without properly transferring their knowledge to subordinates because the processes are not well defined. Sections 4.5.5 and 4.6.3 indicate ineffectiveness or lack of proper knowledge storage processes to manage tacit knowledge and other processes that are difficult to put in writing. The survey illustrated that the knowledge sharing or transfer process is mainly affected by lack of incentives, trust, resources, poor corporate culture, employee frustrations and lack of current technologies, as shown in Sections 4.5.6 and 4.6.3. The tools used to share knowledge include WhatsApp messenger, electronic mail, workshops and training, such as in-service training, apprenticeships and graduate trainee programmes. ZETDC lacks proper infrastructure or channels to support knowledge sharing or transfer, as evidenced in Sections 4.5.5 and 4.6.3.

Findings from Sections 4.5.1 and 4.6.1 concur with the Section 2.2, which states that tacit knowledge that resides in the human mind is difficult to share and store, hence special skills and practices are required to manage it. Since tacit knowledge is difficult to capture, the organisation needs to evaluate the knowledge to check if it is relevant, reliable and valuable. Lack of proper management of stored knowledge affects the timeous provision of knowledge required for effective decision-making. Consequently, this affects knowledge acquisition and application, as well as knowledge creation negatively. Knowledge is stored in manuals and records using the manual KM system, as shown in Sections 4.5.2 and 4.6.2. The KM technologies and infrastructure at ZETDC

were said to be effective to a limited extent. Recommendations were made to keep abreast with current technologies in the market.

5.3.3 WHAT ARE THE ENABLERS AND INHIBITORS OF SUCCESSFUL KM AT ZETDC?

According to Section 2.7, strategy, corporate culture, people and IT are the enablers of KM. Organisations should therefore acquire these to implement KM successfully. The section also emphasised the cultivation of enablers if they are present or their creation if they are unavailable. Failure to take enablers into account inhibits the execution of KM. Sections 4.5.8 and 4.6.6 illustrate that ZETDC does not have a KM strategy in place, as KM is not a priority to the organisation at the moment. This is contrary to Section 2.7.1, which states that a strategy offers the basic building blocks used to accomplish organisational learning and continuous improvement to prevent recurring mistakes.

While Section 2.7.2 states that corporate culture is key in the successful execution of KM, evidence from the previous chapter confirms that the organisational culture at ZETDC is in poor shape, as shown in Sections 4.5.7 and 4.6.5. Some of the factors regarding leading to it being in poor shape include lack of trust, the existence of a blaming culture, contributions not being valued and unclear operational guidelines to help staff learning, among others. The absence of a corporate culture hampers knowledge sharing, transfer and employee learning to develop new knowledge. As observed in Section 2.7.2, organisational culture is imperative because it forms a framework for social relations and creates the practices used for creating as well as adopting fresh knowledge. Therefore, ZETDC must create an open and trusting culture, as suggested by the participants. Although organisational learning provides organisations with the ability to transform through constant advancements, based on learning from best practices and lessons learnt from mistakes, this does not happen at ZETDC, as shown in Sections 4.5.7 and 4.6.7. The culture and strategies at ZETDC do not promote learning, with the result that employees lack innovation because they are not permitted to make mistakes and their contributions are not valued.

Since people are the most inimitable and critical knowledge assets required to remain competitive in this day and age, they should be managed well for KM to succeed, as delineated in Sections 2.4.1 and 2.7.3. Some of the factors inhibiting employees from creating, sharing and transferring knowledge include lack of involvement, inadequate support from top management, HR recruitment and promotion policies and lack of incentives and resources, as shown in Sections 4.5.6 and 4.6.4. Respondents urged the organisation to recognise and value their contributions to offer them tangible or intangible rewards, such as learning opportunities. Participants expressed concern about the recruitment and promotion procedures, which only focus on academic qualifications instead of one's experience or skills and said that it demoralises them, thus affecting the creation, sharing or transfer of knowledge.

According to Sections 2.4.3 and 2.7.4, IT plays a pivotal role in KM because it hastens KM processes of creating, storing, retrieving and transferring knowledge in organisations. Sections 4.5.5 and 4.6.3 show that the current technologies at ZETDC do not promote the reach and scope of exchanging information among individuals or groups to enhance organisational performance. When asked to comment on the IT infrastructure at ZETDC, 70% of the participants stated that it needs to be improved to keep abreast with current trends and to support innovation, knowledge creation, sharing, transfer and storage. The current IT infrastructure supports the organisation to a limited extent, as shown in Section 4.6.3, because it inhibits knowledge creation, sharing/transfer and storage, since only a manual KM system currently exists. Currently, electronic mail and WhatsApp are mainly used for formal communication within the organisation.

5.3.4 HOW CAN ZETDC ACHIEVE THE BENEFITS OF KM?

As outlined in Section 2.1, knowledge assets are critical for the survival and growth of any organisation in the 21st century because they are the most significant asset for any knowledge-based organisation and they drive organisational performance, hence must be managed effectively. As substantiated by the data analysed in Sections 4.5.9 and 4.6.7, ZETDC is not enjoying the benefits of KM, even though there is a KM system in place. The organisation is not aware of the revenue-generating potential of its knowledge assets and knowledge is not linked to the financial results of the organisation as shown in Section 4.6.7. Although participants agreed that improving overall

organisational performance is a major objective of KM they do not have a strategy for it because it is not a priority at present nor are they aware of the benefits of KM, as substantiated in Section 4.5.8 and 4.6.6.

As pointed out in Sections 4.5.8 and 4.6.6, ZETDC does not have strategies, processes and technologies to acquire, select, organise, share and leverage the organisation's critical information and expertise with the aim of improving company productivity and decision quality. The current technologies within ZETDC do not promote the reach and scope of exchanging information among individuals or groups to enhance organisational performance, as shown in Sections 4.5.5 and 4.6.3. As ZETDC operates in a rapidly changing environment, it should start focusing more strongly on knowledge development and management for a bright future. The organisation needs to address the issues outlined by the three sub-questions discussed above to enjoy the benefits of KM. Although, focusing solely on improving the KM system and processes aids ZETDC in enjoying the benefits of KM, addressing the main inhibitors of KM identified in Section 2.6 and integrating KM activities with DCs, as shown in Section 5.1, enable it to gain and sustain a competitive advantage in the rapidly changing environment in which it operates.

As shown in Sections 4.5.2 and 4.6.2, ZETDC experiences major difficulties in creating, sharing, transferring and storing knowledge. The organisation can utilise the knowledge development capability to create and acquire fresh knowledge from both internal and external sources. Moreover, analytical systems and individual capabilities, such as market sensing, can be used to continuously and consistently acquire strategically significant information such as market trends, competitors' activities and best practices from the environment, as pointed out in Section 2.5.3. Systematic monitoring of the environment increases ZETDC's chances of becoming aware of upcoming markets, trends and technology developments, as well as tapping into new business areas.

The electricity supply industry can also utilise its research and development unit to conduct both internal and external research on how to sense and react to changes in the market, technological advancement, consumer tastes and demands and innovation, as well as value offering through socialisation. As explained in Section 2.5.3, ZETDC can use customer orientation to determine its target market, competitor orientation to recognise the long-run competences of current and future

competitors and inter-functional synchronisation to direct the exploitation of its resources to craft superior customer value.

As outlined in Sections 2.4.1, 2.6.3, people are the most important resources for the successful application of KM, hence they should be managed well. According to Sections 4.5.2, 4.5.3 and 4.6.4, ZETDC experiences challenges in managing employees. The participants recommended the provision of incentives, improved infrastructure and a good corporate environment that supports organisational leaning and knowledge creation, sharing and transfer.

ZETDC's ability to utilise the concept of learning orientation to get to know its market environment and to use this information appropriately to guide its actions is the driving force for enhancing organisational performance, as shown in Section 2.5.3. Furthermore sensing may take place formally through dedicated processes or informally by chatting with customers (socialisation). ZETDC can identify opportunities through differential access to existing information or creation of opportunities through new information and new knowledge, which can be exogenous or endogenous. Direct interaction with the environment helps ZETDC build up significant tacit knowledge, which is based on existing beliefs, past experiences, context and sense of purpose, as shown in Section 2.6. Knowledge management enables ZETDC to sense technological opportunities in the marketplace using organisational learning aids to gain a better understanding of what knowledge is available. Furthermore, organisational learning helps identify non-economic factors, such as values and cultures and enables employees to share knowledge directly with other employees, who learn the tacit skills by observing, imitating and practising.

In order to implement KM successfully, the electricity supply industry should improve knowledge assembly, knowledge sharing and knowledge integration, as shown in Section 5.1. ZETDC can address the challenges inhibiting knowledge sharing or transfer by creating an environment, infrastructure and culture that promote sharing or transfer of knowledge. Conversely, knowledge integration can be improved by combining the assembled knowledge resources to function together in order to create organisational capability that can form the basis for new products, services or knowledge, as shown in Section 5.1. The electricity supply industry can use the knowledge recombination capability to develop and select business opportunities suitable for the organisation's

environment as explained in Sections 2.5.3 and 2.6. ZETDC can employ the seizing capability for strategic decision-making, particularly regarding investment decisions. ZETDC ought to develop a strategy that enables the recognition of valuable knowledge. Proper use of the seizing capability will increase ZETDC's ability to decide what information is of potential value in transforming valuable information into concrete business opportunities that fit its strengths and weaknesses and to make decisions accordingly as illustrated, in Sections 2.6 and 5.1. As shown in Section 1.4, ZETDC's main goal is to minimise disruptions in power supply and be the preferred supplier of electricity regionally and globally. In order to achieve its main goal the organisation should analyse its structures, procedures, designs and incentives for seizing opportunities as explored in Sections 2.6 and 5.1.

As delineated in Section 2.6, ZETDC should clearly outline the customer solution and business model and should select decision-making protocols and enterprise boundaries to manage complements and control platforms, as well as build loyalty and commitment. ZETDC can use the seizing capability to mobilise the organisation's resources to capture value from these opportunities. This process involves designing innovative business models to satisfy customers and capture value, as well as obtaining access to capital and resources. However, ZETDC should ensure that its employees are motivated to be effective, as suggested in Sections 2.4, 2.7, 4.5.6 and 4.6.4. The organisation must also build strong external relationships with suppliers, complementors and customers. Furthermore, ZETDC can use the knowledge transfer process to determine primary suppliers, recognise changing customer needs and the market segments to target and knowledge-sharing processes required to aid in selecting technology and target customers. Delineating the customer solution and the business model micro-foundations shown in Figure 7 can be used to select technology and product architecture, design revenue architectures, select target customers and design mechanisms to capture value. On the other hand, the decision-making protocols can be used by ZETDC to identify inflexion points and complementarities, avoid decision errors and anti-cannibalisation proclivities. Lastly, to build loyalty and commitment, ZETDC's top management should demonstrate effective leadership, encourage effective communication throughout the organisation and recognise non-economic factors, values and culture, as suggested in Sections 2.6

and 4.5.2. The organisation's top management plays a critical role in stimulating loyalty and commitment and in achieving adherence to innovation and efficiency.

Lastly, ZETDC should utilise the knowledge use capability explained in Section 5.1 to leverage and exploit knowledge for value creation activities in the organisation. Firstly, it should implement the required structures and routines, provide the infrastructure and equip employees with the requisite skills to make decisions on new business models, products or process innovations, as explored in Section 2.6. The electricity supply industry must use transformation to recombine and reconfigure assets and organisational structures as the enterprise grows and as markets and technologies change. The transforming capability enables ZETDC to implement resolute renewal activities consistently by assigning responsibilities, allocating resources and ensuring that the workforce possesses the newly required knowledge, as outlined in Section 2.6. ZETDC must use its transforming capabilities to renew its processes continuously and maintain its relevance to consumers. Section 2.5.3 of the literature study emphasised that the organisation's assets should be retained in alignment to achieve the best strategic "fit", thus firm with ecosystem, structure with strategy, and assets with one another. Moreover, complementarities must be managed constantly to attain evolutionary fitness, thereby avoiding loss of value, should market leverage shift to favour external complements.

ZETDC should pursue decentralisation as it expands to ensure flexibility and responsiveness. It should also exploit governance to check strategy malfeasance and block rent dissipation, as explored in Section 2.6. The electricity supply industry should combine its uniquely valuable assets through co-specialisation to achieve a sustainable competitive advantage. It should also adopt a strategy that involves selecting and developing new technologies and new business models that build competitive advantage through amassing and coordinating valuable and unique resources. ZETDC can use the knowledge acquisition and knowledge conversion processes to accumulate knowledge and ease the flow of knowledge from external to its internal knowledge stocks while integrating, distributing and transferring the newly attained knowledge within the organisation's boundaries, as shown in Figure 14. ZETDC ought to comprehend that knowledge integration is imperative in identifying and avoiding opportunities that would lead to cannibalisation and is required to establish the asset permutations that enhance value.

As pointed out in Section 2.6, ZETDC has to use knowledge protection processes to maintain the proprietary nature of its knowledge assets, as well as pursue their legal protection by means of patents, trademarks and copyright. Knowledge processes as dynamic capabilities are regarded as crucial component in the quest for competitive advantage. The electricity supply industry can deter imitation by competitors through incessant recombination and application of knowledge and these superior stocks and flows of knowledge are expected to proffer a sustained advantage for the organisation. Knowledge process capabilities assist in growing organisational effectiveness and acquiring a competitive advantage.

5.4 CONCLUSION

It is evident that the electricity supply industry lacks proper KM systems and strategies, which could prevent the organisation from suffering knowledge drain due to employee retirements and employee mobility. The inertia affecting organisational culture and KM technologies plays a crucial role in blocking the proper management of both tacit and explicit knowledge. Strategy, organisational culture, people and KM technologies inhibit the successful application of KM, as shown by the various challenges faced by the organisation, such as lack of innovation, high electricity rates and poor customer service. The organisation's failure to prioritise KM could also be the reason for the ineffectiveness of the current KM system. WhatsApp messenger and electronic mail are the main channels used for communication, while training and workshops are used to share and transfer knowledge. Knowledge creation is done through sharing ideas and organisational learning. A manual KM system is used to store knowledge in manuals and records. The integration of KM and DCs is used to enhance the application of KM as an organisational tool. However, participants urged the organisation to improve the KM system, processes and infrastructure to enjoy the benefits of KM and avoid suffering knowledge drain. While this chapter dwelt on the discussion of the findings, the final chapter outlines a summary of findings, conclusions, implications for KM enhancing business value, recommendations and future research.

6 SUMMARY AND RECOMMENDATIONS

The purpose of this thematic study was to determine ways to improve the application of KM as an organisational tool in the electricity supply industry. ZETDC recognises that its KM efforts, which have been in place for some time, are ineffective, as they are not enhancing organisational performance. This chapter starts with a summary of findings. The conclusions are drawn from the findings in a bid to determine the extent to which the objectives of the research study were met, as well as to answer the questions posed at the beginning of the investigation. Recommendations are made based on the challenges identified during the research process and the findings to resolve the identified problem as stated in the statement of the problem. A summary of findings, implications for KM enhancing business value, recommendations and future research are also explored.

KM for enhancing organisational performance was researched by analysing the current KM system and practices, as well as determining the impact of the current KM system on organisational performance at ZETDC. Chapter 6 begins by providing a restatement of the main research question and research sub-questions, shown in Figure 14.

MAIN RESEARCH QUESTION:

How can KM be applied as an organisational tool in the electricity supply industry in Zimbabwe?

SUB-QUESTIONS:

1. What are the different types of knowledge existing at ZETDC?
2. What tools and techniques are used for KM at ZETDC?
3. What are the enablers and inhibitors of successful KM at ZETDC?
4. How can ZETDC achieve the benefits of KM?

Figure 14: Research questions

6.1 SUMMARY OF FINDINGS

The purpose of this interpretive case study was to find ways to apply KM as an organisational tool in the electricity supply industry. The study was conducted in a subsidiary company, which happens to be the sole provider and distributor of electricity in Zimbabwe. Since there is no competition in the electricity supply industry, the scarce skills of employees mean that any employee retirement or employee mobility results in knowledge drain. Electricity is the backbone of the Zimbabwean economy because it is the major form of energy used. ZETDC depends heavily on its employees' knowledge base for its current and future needs, hence knowledge needs to be managed effectively and efficiently to generate a sustainable competitive advantage.

The literature review showed that KM is crucial for survival and growth in the ever-changing environment in which organisations operate because competition is no longer based on financial resources, but on knowledge assets. Knowledge creation, sharing, transfer and storage were described as the main processes of KM, while strategy, people, culture and technology were identified as the main enablers or inhibitors of successful KM implementation. Organisations were urged to adopt KM effectively to enjoy its benefits, such as competitive advantage and better decision-making. Knowledge, KM, KM processes, KM enablers and inhibitors, KWs, LOs, DCs, and integration of DCs with KM activities, as well as the KM organisational context, were explored.

A summary of findings is given with respect to each research objective in the following section.

6.1.1 OBJECTIVE 1: IDENTIFY AND EVALUATE THE TYPES OF KNOWLEDGE USED AT ZETDC

The organisation is a knowledge-based organisation, which relies heavily on historical knowledge for its day-to-day operations and future use, hence it employs knowledge. It uses both explicit knowledge, which is easily identified and shared, and tacit knowledge, which is difficult to share because it resides in the human mind, behaviour and perceptions. However, the organisation experiences difficulties in managing tacit knowledge.

6.1.2 OBJECTIVE 2: IDENTIFY AND EVALUATE THE EFFECTIVENESS OF CURRENT KM, TOOLS, TECHNIQUES, PRACTICES AND PROCESSES AT ZETDC.

Knowledge management refers to the strategies, processes and technologies used to manage knowledge. KM involves people, knowledge, processes and technology. People, processes and technology are used to manage knowledge effectively to attain a competitive advantage in knowledge-based economies. People are the inventors and users of knowledge, therefore they should be managed effectively. The processes of KM include knowledge capture and creation, knowledge sharing and dissemination, as well as knowledge acquisition and application. Technology creates opportunities for developing new processes and offers support to people in carrying out their day-to-day tasks. KM is critical for the survival and growth of any organisation, big or small, because it reduces loss of knowledge due to an aging workforce and employee mobility. A manual KM system is used through which knowledge is recorded in manuals that are kept in the registry department. Effective KM augments individual and organisational aptitude, motivation and opportunities to learn, obtain knowledge and perform better so as to gain a competitive advantage. The processes of acquiring, analysing, managing and sharing relevant knowledge and business information throughout the organisation are not clear. Participants lack the motivation to create, share or transfer knowledge. The technology infrastructure promotes innovation, knowledge creation, sharing, transfer and learning to a limited extent and could be improved. The KM system, processes and technology should be improved and managed effectively.

6.1.3 OBJECTIVE 3: IDENTIFY THE FACTORS OF KM INHIBITING THE EFFICACY OF KM SYSTEM AT ZETDC.

The third question investigated the enablers and inhibitors of the successful application of KM in any organisation. KM enablers or inhibitors are crucial elements that determine the success of an organisation in implementing KM. People, IT, corporate culture and strategy are the enablers or inhibitors of KM, hence organisations should acquire these to implement KM successfully. People are the major assets of any organisation because they are the inventors and users of knowledge. Therefore, employees' motivation, willingness and aptitude to distribute and utilise the knowledge

of others are pertinent for the success of KM initiatives. It was observed that the organisation does not provide incentives for knowledge creation, sharing and transfer, hence employees are reluctant to create, share or transfer knowledge.

Managing employees' knowledge is not central to the organisation's strategy, as KM is not a priority for the organisation. ZETDC does not have a KM strategy, nor is KM included in the organisation's general strategy. KM strategy is an important enabler of KM and should be managed effectively for the successful execution of KM. Organisational culture plays a critical role in the successful implementation of KM. The organisational culture does not support knowledge creation, sharing and transfer or organisational learning. There are no clear operational guidelines to help staff to learn and to encourage people to participate in informal learning opportunities. The technologies in place do not support knowledge creation, sharing, transfer, storage and organisational learning. Dealing with the identified KM inhibitors mentioned above could contribute to successful application of the KM system.

6.1.4 OBJECTIVE 4: DETERMINE THE IMPACT OF CURRENT KM PRACTICES ON ORGANISATIONAL PERFORMANCE.

Effective KM is critical for the organisation's survival and growth because it drives organisational performance. Successful implementation of KM together with the DCs framework, enhances the performance of the organisation by increasing effectiveness, customer service, quality and novelty, among other benefits in the rapidly changing environment in which it operates. The current KM system is not effective because the organisation is not enjoying the benefits of KM. Furthermore, the current KM system is risky because it is manual and the organisation might lose the knowledge owing to natural disasters. It was noted that respondents are unaware of the benefits of KM and knowledge is not linked to the financial results of the organisation. To implement a KM system successfully the organisation should manage the components of KM effectively, namely people, processes, knowledge and technology effectively. The organisation should use people, processes and technology to leverage knowledge to enjoy a competitive advantage. It should also manage the enablers and inhibitors of KM implementation, which are people, corporate culture, IT and strategy. The recommendations are discussed in Section 6.3.

6.2 IMPLICATIONS FOR KNOWLEDGE MANAGEMENT AS AN ORGANISATIONAL TOOL AT ZETDC

The exit of critical knowledge assets from specialised fields is inevitable and the situation is worse when this is from challenged economies such as Zimbabwe. The best antidote is therefore the establishment of robust KM systems. Failure to establish such a process normally leads to the severe erosion of tacit and explicit knowledge from organisations, which can threaten their very existence and mandate. Organisations such as ZETDC and others like it need to be guided by the recommendations of this study in order to improve the manner of managing knowledge and also to dilute the challenges associated with the management of such an elusive concept as knowledge.

This study revealed that KM is a critical tool for the survival and growth of knowledge-based industries. A proper KM system and strategy would help the electricity supply industry manage its implicit and explicit knowledge well to avoid the risk of experiencing knowledge drain. KM activities present organisations with solutions to create, preserve, transfer and use their knowledge. However, the KM processes alone do not provide the ability to respond to rapidly changing environments offered by DCs. DCs enable the organisation to renew its resources continuously by reconfiguring them into new capabilities and competences to address the fast-changing environment. Although the absence of DCs makes it impossible for firms to enhance organisational performance, DCs do not operate in isolation, as they accentuate change processes in the organisation's resource base. Therefore, integrating the KM activities and DCs at ZETDC would result in the enhancement of organisational performance, enabling it to maintain a competitive advantage (business value) in the rapidly changing environment in which it operates. DCs are seen as key to the creation of value from investments in knowledge creation or acquisition of the organisation. Successful linkage of KM activities and DCs presents ZETDC with an opportunity to renew its competitive advantage continuously in a changing environment.

6.3 RECOMMENDATIONS

ZETDC has recognised that its KM efforts, which have been in place for some time, are ineffective, as they are not enhancing organisational performance. Successful implementation and management

of KM would provide many advantages to the organisation, its employees and its various stakeholders. The benefits of KM organisation include gaining a competitive advantage over competitors and enhancing effectiveness, customer service, quality and novelty. DCs provide the ability to renew or reinvent organisational resources continuously to gain and maintain a competitive advantage, survival and growth as well as enhanced organisational performance in fast-changing environments. Integrating KM activities and DCs in the application of KM as an organisational tool at ZETDC would enable the organisation to enjoy the benefits of both KM and DCs.

As illustrated in Figure 13, the ZETDC can use the connection between KM activities and DCs in its application of KM. The organisation can use the knowledge development capability to create and acquire knowledge, using both internal and external sources. Furthermore, the electricity supply industry can use analytical systems and individual capabilities such as market sensing to identify threats and exploit opportunities. Knowledge capturing can be enhanced by adopting current technologies that permit the effective storage of knowledge as well as ensuring that the technology is frequently updated to keep abreast with current trends. ZETDC can use the knowledge recombination capability to combine and integrate its knowledge-based resources to form organisational capabilities. These organisational capabilities can then be utilised by the knowledge use capability to exploit the ZETDC's existing and previously integrated knowledge resources in value creating activities that would result in the development of goods and services.

Successful application of KM as an organisational tool enables organisations to make better and faster decisions and reduce the risk of errors, thus reducing operating costs because they have better access to employees' knowledge. ZEDTC would benefit from sharing and reuse of specialist expertise, improved communication among employees and rapid problem-solving. To enable ZETDC to manage its knowledge effectively and avoid suffering knowledge drain, the following recommendations should be implemented:

- ZEDTC should improve its KM system from manual to electronic so that it can be accessible to all employees at any time and from anywhere.

- It should cultivate enablers of KM implementation, namely people, IT, corporate culture and strategy if present or create these if not available.

- ZETDC should adopt an organisational culture that supports continuous employee learning, critical thinking and risk-taking with new ideas, which is indispensable for the enhancement of an organisation functions. Additionally, a KM approach that suits its culture should be constructed.

- The electricity supply industry can deter imitation by competitors through incessant recombination and application. Furthermore, it can use its transforming capabilities to renew the organisation's processes continuously and maintain its relevance to consumers.

- ZETDC should ensure that KM processes augment individual and organisational aptitude, motivations and opportunities to learn, obtain knowledge and enhance performance.

- KM technologies should be improved to keep abreast with current technologies that enhance organisational performance.

- ZETDC should adopt an LO approach that provides the organisation with the ability to transform through constant advancement based on learning from best practices and lessons learnt from mistakes.

- ZETDC should manage its knowledge assets, namely people. Employees' motivation, willingness and aptitude to distribute and utilise the knowledge of others are pertinent for the success of KM initiatives. Employees should be given incentives to promote innovation, knowledge creation, sharing and transfer of knowledge.

- ETDC should develop a KM strategy that is based on the organisational strategy to establish effective KM.

- Intergration of KM activities with DCs is necessary for the successful application of KM as an organisational tool in the the rapidly changing environment in which ZETDC operates.

6.4 FUTURE RESEARCH

Further research is recommended on this topic in other subsidiaries of ZESA Holdings, which could then be compared with the findings of this research. More research should be done on this topic in other energy sectors, such as coal and renewable energy, among others.

7 REFERENCES

Adams, W. C., 2015. Chapter 4: Conducting Semi Structured Interviews. In: H. H. P. Newcomer Kathryn E & W. J. S, eds. *Handbook of Practical Program Evaluation.* 4th ed. Chicago: Jossey-Bass, pp. 492 - 505.

Argote, L. & Ingram, P., 2000. Knowledge Transfer: A basis for competitive advantage in firms. *Organizational Behaviour and Human Decision Processes,* 82(1), pp. 150-169.

Argote, L., McEvily, B. & Reagans, R., 2003. Managing Knowledge in Organisations: An intergrative framework and review of emerging themes. *Management Science*, 49(4), pp. 571-582.

Armstrong, A., 2009. *Handbook of HRM Practice.* 11th ed. London: UK.

Babelytė-Labanauskė, K. & Nedzinskas, S., 2017. 'Dynamic capabilities and their impact on research organizations' R&D and innovation performance'. *Journal of Modelling in Management*,12, pp. 603–630.

Bacon, F., 1597. *Meditationes sacrae.* New York: Londini: Excusum impensis Humfredi Hooper.

Baloh, P., Desouza, K. C. & Paquette, S., 2011. The concept of knowledge. In: *Knowledge Management: An Introduction* . New York: Neal-Schuman Publishers, Inc, pp. 35-71.

Barney, J., 1986. "Strategic factor markets: expectations, luck and business strategy". *Management Science*, 32(10), pp. 1231-1241.

Barreto, I., 2010. Dynamic capabilities: A review of past research and an agenda for the future. *Journal of management*, 36(1), pp. 256-280.

Basadur, M. & Gelade, G., 2006. The Role of Knowledge Management in the Innovation Process.. *Creativity and Innovation Management.*, 15, pp. 45-62.

Bierema, L. L., 1999. The process of the learning organization: Making sense of change.. *NASSP Bulletin*, 83(604), pp. 46-56.

Bishop, J., Bouchlaghem, D., Glass, J. & Matsumoto, I., 2008. Ensuring the Effectiveness of a Knowledge Management Initiative. *Bishop, J., Bouchlaghem, D., Glass, J. and Matsumoto, I. (2008) Journal of Knowledge Management*, (12), pp. 16-29.

Blackler, F., 1995. Knowledge, knowledge work, and organisations: An overview and interpretation. *Organisation studies*, 16(6), pp. 1021-1046.

Bosua, R. & Venkitachalam, K., 2013. Aligning strategies and processes in knowledge management: a framework. *Journal of Knowledge Management,* 17(3), pp. 331-346.

Brancato, G. e. a., 2004. *Handbook of Recommended Practices for Questionnaire Development and Testing in European Statistical System.* s.l.:European Statistical System..

Braun, V. & Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), p. 83.

Brink, H., 1996. *Fundamentals of research methodology for health care professionals.* Kenwyn: Juta.

Burns, N. & Grove, S., 2005. *The Practice of Nursing Research:Conduct, Critique, and Utilization (5th Ed.).* St. Louis: Elsevier Saunders.

Carvalho, R. B. & Ferreira, M. A. T., 2001. Using information technology to support knowledge conversion processes. *Information Research,* 7(1).

Cepeda, G. & Vera, D., 2007. Dynamic capabilities and operational capabilities: A knowledgemanagement perspective. *Journal of Business Research,* 60(5), p. 426–437.

Chesbrough, H. & Rosenbloom, R. S., 2002. The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies.. *Industrial and Corporate Change,* 11(3), pp. 529-555.

Chinnam P, 2017. *Linkedin: Learning Organizations~Peter Senge's 5 Disciplines.* [Online] Available at: https://www.linkedin.com/pulse/learning-organizationspeter-senges-5-disciplines-praveen-chinnam/

[Accessed 27 November 2019].

Choy, Y. K., 2005. Energy Demand, Economic Growth, and Energy Efficiency – the Bakun Daminduced Sustainable Energy Policy revisited. *Energy Policy,* (33), pp. Choy, Y. K. (2005). Energy Demand, Economic Growth, and Energy Efficiency – 679 – 689 .

Cole, R., Purao, M., Rossi, M. & Sein, M., 2005. Being Proactive: Where Action Research meets Design Research. *Proceedings of the Twenty-Sixth International Conference on Information Systems, Las Vegas,* pp. 325-336.

Cong, X. & Pandya, K. V., 2003. Issues of Knowledge Management in the Public Sector. *Electronic Journal of Knowledge Management,* 1(2), pp. 25-33.

Council, C., 2001. Managing Knowledge at Work, An overview of Knowledge Management. *Knowledge Mangement Working Group of the Federal Chief Information Officers Council.*

Creswell, J. W., 2003. *Research design: Qualitative, quantitative and mixed methods approaches (2nd ed.).* Thousand Oaks, CA: Sage .

Cropper, B., 2018. *The Change Forum 2004-08: Five Learning Disciplines.* [Online] Available at: http://mindfulleadershipinaction.com/Learning_Disciplines.htm

Crotty, M., 1998. *The foundations of social research: Meaning and perspective in the research process.* London: Sage.

Dalkir, K., 2011. *Knowledge Management in Theory and Practice.* 2nd ed. Cambridge USA: MIT Press.

Davenport, T. H. & Prusak, L., 1998. Working Knowledge: How Organisations Manage What They Know. *Havard Business School Press,* pp. 5.

Davernport, T., 2005. *Thinking for living.* HBV School Publishing.

Denscombe, M., 2010. *The Good Research Guide for Small-scale Social Research Projects.* 4th ed. Maidenhead: Open University Press.

Desouza, K. C., 2011. Knowledge Management: An Introduction. *Desouza, K. C. (2011). An introduction to knowledge management. In: K. C. Desouza and S. PaquettNealSchuman Publishers, Inc.* , pp. 3-34.

Dimitriades, Z., 2005. Creating Strategic Capabilities: Organizational Learning and Knowledge Management in the New Economy. *European Business Review,* 17, pp. 314-324.

Douma, S. & Schreuder, H., 2013. *Economic approaches to organisations.* 5th ed. United Kingdom: Pearson.

Drucker, P. F., 1959. *The landmarks of tomorrow.* New York: Harper & Row.

Drucker, P. F., 1999 . Knowledge - Worker Productivity: The Biggest Challenge. *California Management Review,* 41 (2), pp. 79-94 .

Drucker, P. F., 2011. *Landmarks of tomorrow.* New York: Transaction Publishers.

Duffy, J., 2000 . Knowledge management: to be or not to be?. *Information Management Journal* , 34 (1), pp. 64-67 .

Easterby, S. M. & Lyles, M. A., 2003. *The Blackwell Handbook of Organizational Learning and Knowledge Management.*

Edwards, J. S., 2009. Business processes and knowledge management. In: M. Khosrow-Pour, ed. *Encyclopedia of Information Science and Technology.* 2nd., 1 ed. Hershey: IGI Global, pp. 471-476.

Eisenhardt, K. M. & Martin, J. A., 2000. "Dynamic capabilities: what are they?". *Strategic Management Journal,* 21(10-11), pp. 1105-1121.

Emanoil, M., Alexandra, S. & Mihaela, C. L., 2014. Knowledge workers - drivers to organisational performance in a knowledge-based economy. *Mathematical Methods in Engineering and Economics*, pp. 150-154.

Epetimehin, F. M. & Ekundayo, O., 2011. Organisational knowledge management: survival strategy for Nigeria insurance industry. *Interdisciplinary Review of Economics and Management,* 1(2), pp. 9-15.

EPRI, 2005. *Advanced Control Room Alarm System: Requirements and Implementation Guidance,* California: Electric Power Research Institute.

Eskildsen, J., Dahlgaard, J. & Norgaard, A., 1999. The Impact of Creativity and Learning on Business Excellence. *Total Quality Management,* Volume 10, pp. 523-530.

Evans, M., Hastings, N. & Peacock, B., 2000. *Statistical Distributions.* 3rd ed. New York: Wiley.

Feldt, R., 2010. Guide to creating research questions. *Checklist for choice of thesis topic,* pp. 1-3.

Giorgi, A. & Giorgi, B., 2003. Phenomenology. In: *Qualitative Psychology: A Practical Guide to Research Methods.* London: Sage Publications.

Goffin, K., Koners, U., Baxter, D. & Hoven, C. v. d., 2010. Managing Lessons Learned and Tacit Knowledge New Product Development. *Research Technology*, 53(4), pp. 39-51.

Goh, S., 2002. Managing Effective Knowledge Transfer: An Integrative Framework and Some Practice Implications. *Journal of Knowledge Management,* 6, pp. 23-30.

Gold, A. H., Malhotra, A. & Segars, A. H., 2001. 'Knowledge management: an organizational capabilities perspective',. *Journal of Management Information Systems*, 18(1), pp. 185-214.

Goldman, F. L., 2012. The Dynamics of Organizational Knowledge: a Framework for Innovation. *Paper to be presented at the DRUID Academy 2012 on January on 19-21 at University of Cambridge /The Moeller Centre*, pp. 1-35.

Grant, R., 1996. Toward a Knowledge-Based Theory of the Firm. *Strategic Management Journal*, 17, pp. 109-122.

Groff, T. & Jones, T., 2003 . *Introduction to knowledge management: KM in business.* Burlington MA: Butterworth-Heineman .

Guba, E. G., 1990. *The Paradigm dialog.* London: Sage Publications.

Halawi, L. A., McCarthy, R. V. & Aronson, J. E., 2006. Knowledge management and the competitive strategy of the firm. *The learning organisation,* 4(4), pp. 384-397.

Hammersley, M., 2013. *The Myth of Research-Based Policy and Practice.* London: SAGE Publications.

Hammersley, M., 2013. *What is Qualitative Research?.* London and New York: Bloomsburry.

Hardia, A., 2013. ICT Based Knowledge Management in India forSustainable Development and Growth. *Global Journal of Management and Business Studies,* 3(5), pp. 453-458.

Harris, D. A., Kaefer, F. & Salchenberger, L. M., 2013. The development of dynamic capabilities through organisational and managerial processes. *Int. J. Business Environment, Vol. 5, No. 4, 2013,* 5(4), pp. 398-412.

Harvey, R. & Hider, P., 2004. Organising Knowledge in a Global Society. *Centre for Information Studies, Wagga Wagga.*

Helfat, C. E., 1997. 'Know-How and Asset Complementarity and Dynamic CapabilityAccumulation: The Case of R&D'. *Strategic Management Journal,* 18(5), pp. 339-360.

Helfat, C. E. & Peteraf, M. A., 2015. Managerial cognition capabilities and the micro-foundations of dynamic capabilities. *Strategic Management Journal,* 36, pp. 831-850.

Hislop, D., 2013. *Knowledge management in organisations: A critical introduction.* 3rd ed. UK: Oxford University Press.

Hoffman, R. R. & Hanes, L. F., 2003. The boiled frog problem. IEEE Intelligent Systems. *University of Phoenix ProQuest,* 18(4), pp. 68-71.

HRMagazine, 2009. Leveraging HR and knowledge management in a challenging economy.. *SHRM Research Quarterly, HR Magazine,* 54(6), pp. 1-10.

Iivari, J. & Venable, J., 2009. *Action research and design science research – Seemingly similar but decisively dissimilar, 17th European Conference on Information Systems.* Verona, s.n.

Jarvinen, P., 2005. *Action research as an approach in design science, the EURAM (European Academy of Management) Conference.* Munich.

Javadi, M. & Zarea, M., 2016. Understanding Thematic Analysis and its Pitfalls. *Journal Of Client Care,* 1(1), pp. 33-39.

Johnson, S., 2014. *Advantages and Disadvantages of Positivism. eHow.*. [Online] Available at: http://www.ehow.com/info_12088541_advantages-disadvantages-positivism.html.

Kannan, V., Mohanta, G. & Thooyamani, K. P., 2006. Strategies for improving prodctivityof knowledge workers - An overview. *Strength based strategies*, 1, pp. 77-84.

King, W. R., 2008. Questioning the conventional wisdom: culture knowledge management relationships. *Journal of Knowledge Management,* 12(3), pp. 35-47.

Kokavcova, D. & Mala, D., 2009. Knowledge Sharing – the Main Prerequisite of Innovation. *Kaunas: Management of Organizations: Systematic Research,* 51, pp. 1392-1142.

Kothari, C. R., 2004. *Research Methodology: Methods and Techniques (2nd Ed).* India: New Age International Publishers.

Kuhn, T. S., 1962, 1970. The Structure of Scientific. *International Encyclopedia of Unified Science,* 2(2), pp. 1-200.

Kump, B., Engelmann, A., Schweiger, C. & Keßler, A., 2016. Towards a dynamic capabilities scale: Measuring organizational sensing, seizing, and transforming capacities. *Article in Academy of Management Annual Meeting Proceedings,* pp. 1-53.

Leedy, P. D. & Ormrod, J. E., 2010. *Practical Research Planning and Design.* 9th ed. Boston: Pearson.

Lee, H. & Choi, B., 2000. Knowledge Management Enablers, Processes, and Organizational Performance: An Integration and Empirical Examination. *Journal of Management Information Systems,* 20(1), pp. 179-228.

Lee, H. & Choi, B., 2003. Knowledge Management enablers, processes, and organizational performance: an integrative view and empirical examination. *Journal of Management Information Systems*, 20(1), pp. 179-228.

Liao, S. & Wu, C., 2009. The Relationship among Knowledge Management, Organisational Learning and Organisational Performance. *International Journal of Business and Management,* 4, pp. 64-76.

Lincoln, Y. S. & Guba, E. G., 1985. *Naturalistic Inquiry.* CA: Sage Publications.

Lin, C. Y. & Kuo, T. H., 2007. The mediate effect of learning and knowledge on organizational performance. *Industrial Management & Data Systems,* 107(7), pp. 1066-1083.

Makkonen, H., Pohjola, M., Olkkonen, R. & Koponen, A., 2014. 'Dynamic capabilities and firm performance in a financial crisis'. *Journal of Business Research,* 67, pp. 2707-2719.

Marshall, C. & Rossman, G. B., 1999. *Designing qualitative research.* London: Sage.

Martin, W. J., 2004. Demonstrating Knowledge Value: A Broader Perspective on Metrics.. *Journal of Intellectual Capital,* 5, pp. 77-91.

McDermott, R. & O'Dell, C., 2001. Overcoming culture barriers to sharing knowledge. *Journal of Knowledge Management,* 5(1), pp. 76-85 .

McDonough J, M. S., 1997. *Research Methods for English Language Teachers.* London: Arnold..

Mertens, D., 2009. *Transformative research and evaluation.* New York: The Guilford Press.

Mesquita, D. L. et al., May/June 2017. Dynamic Capabilities In Automotive Pollutants Reduction Technologies:Case Study. *Mackenzie Management Review,* 18(3), pp. 15-41.

Mhlanga, P., 2016. *Zimbabwe Faces Electricity Disaster.* [Online]
Available at: http://www.financialgazette.co.zw/zimbabwe-faces-electricity-disaster/
[Accessed 12 March 2018].

Moffett, S., McAdam, R. & Parkinson, S., 2003. An Empirical Analysis of Knowledge Management Applications. *Journal of Knowledge Management,* 7, pp. 6-26.

Mohamed, A. R. & Lee, K. T., 2006 . Energy for Sustainable Development in Malaysia: Energy Policy and Alternative Energy. *Energy Policy ,* (34), p. 2388 – 2397 .

Mohapatra, S., Agrawal, A. & Satpathy, A., 2016. *Designing Knowledge Management-Enabled Business Strategies: A Top-Down Approach.* Switzerland: Springer International Publishing.

Monette, D. S. T. &. D. C., 2011. *Applied social research: a tool for the human services.* London: Brooks/Cole Cengage Learning.

Morales, V., Montesa, F. & Joverb, A., 2007. Influence of Personal Mastery on Organizational Performance through Organizational Learning and Innovation in Large Firms and SMEs.. *Technovation,* 27, pp. 547-568.

Myers, M., 2008. *Qualitative Research in Business & Management.* s.l.:SAGE Publications.

Nelson, R. & Winter, S. G., 1982. *Evolutionary theory of economic change.* Cambridge, MA:: Belknap Press of Harvard University Press..

Nguyen, Q. & Neck, P., 2008. *Key enablers for enhancing knowledge management processes: A means of competitive advantage for small and medium sized enterprises in Vietnam.* Melbourne, Australia, Proceedings of the 2008 Entreprenuership Global Conference, 3-4 July.

Nick, M. & Stephanie, B., 2014. *Designing a successful Knowledge Management Strategy: A guide for the Knowledge Management Professional.* Medford, USA: Professional, Information Inc.

Nielsen, P. A., 2006 . Understanding dynamic capabilities through knowledge management. *Journal of Knowledge Management,* 10 (4), pp. 59-71.

Njuguna, J., 2009. Strategic Positioning for Sustainable Competitive Advantage: An Organisational Learning Approach. *KCA Journal of Business Management,* 2, pp. 32-43.

Nonaka, I., 1991. The knowledge-creating company. *Harvard Business Review,* 69(6), pp. 96-104.

Nonaka, I., 1994. A dynamic theory of organisational knowledge creation. *Organisation Science,* 5(1), pp. 14-37.

Nonaka, I. & Konno, N., 1998. The concept of "Ba: building a foundation for knowledge creation. *California Management Review ,* 40 (3), pp. 40-55 .

Nonaka, I. & Takeuchi, H., 1995. *The knowledge creating company.* New York: Oxford University Press.

Nonaka, I. & Toyama, R., 2007. Strategic management as distributed practical wisdom (phronesis). *Industrial and Corporate Change,* 16(3), pp. 371-394.

Novikov, A. M. & Novikov, D., 2013. Research Methodology: From Philosophy of Science to Research Design. *CRC Press.*

Oates, B. J., 2006. *Researching Information Systems and Computing.* London: SAGE Publications Ltd.

Omotayo, F. O., 2015. Knowledge Management as an important tool in Organisational Management: A Review of Literature. *Spring,* pp. 1-20.

Ong, H. C., Mahlia, T. M. I. & Masjuki, H. H., 2011 . A Review on Energy Scenario and Sustainable Energy in Malaysia. *Renewable and Sustainable Energy Reviews,* Issue Ong, H. C., Mahlia, T. M. I. and Masjuki, H. H (2011). A Review on Energy Scenario and 15, pp. 639-647 .

Onwuegbuzie, A. J. & Leech, N. L., 2007. Sampling Designs in Qualitative Research: Making the Sampling Process More Public. *The Qualitative Report,* 12(2), pp. 238-254.

Paisittanand, S., Digman, L. & Lee, S., 2009. The Effect of Knowledge ProceCapabilities and Knolwedge Infrastructure Capabilities on Strategy Implementation Effectiveness. In: M. Jennex, ed. *Knowledge Management, Organisational Memory and Transfer Behaviour: Global Approaches and Advancements.* Hershey, PA: Information Science Reference.

Paschek, D., Ivascu, L. & Draghici, A., 2018. Knowledge Management: The foundation for a successful business process management. *Elsevier*, pp. 1-10.

Polanyi, M., 1967. *The tacit dimension.* London, UK: Routledge and Kegan Paul.

Polit, P. D. & Hungler, P. B., 1999. *Nursing Research: Principles and Methods.* 6th ed. Philadelphia: J.B. Lippincott..

Posner, P. L., 2009. The Pracademic: An Agenda for Re-Engaging Practitioners and Academics. *Public Budgeting & Finance,* 29(1), pp. 12-26 .

Ramanigopal, C. S., 2012. Knowledge Management For The Oil And Gas Industry: Opportunities And Challenges. *Asian Journal of Business and Economics,* 2(2.4), pp. 1-14.

Riege, A., 2007. Actions to overcome knowledge transfer barriers in MNCs. *Journal of Knowledge Management,* 11(1), pp. 48-67.

Saidi A A S, 2015. Positioning Organisational Culture in Knowledge Management. *Journal of Knowledge Management,* 19(2), pp. 164-189.

Sandhawalia, B. S. & Dalcher, D., 2011. Developing Knowledge Management Capabilities: A Structured Approach. *Journal of Knowledge Management,* 15, pp. 313-328.

Satayadas, A., Harigopal, U. & Cassaigne, N., 2001. Knowledge Management Tutorial: An editorial overview. *IEEE Transactions on Systems, Man and Cybernetics (Part C),* 31(4), pp. 429-437.

Saunders, M., Lewis, P. & Thornhill, A., 2003. *Research Methods for Business Students.* Harlow: Pearson Education.

Saunders, M., Lewis, P. & Thornhill, A., 2007 . *Research Methods for Business Students.* 4th ed. Harlow: Financial Times Prentice Hall.

Saunders, M., Lewis, P. & Thornhill, A., 2012. *Research Methods for Business Students,* 6th ed. Pearson Education Limited.

Schumpeter, J. A., 1934. *Theory of Economic Development.* Cambridge, MA: Havard University Press.

Schwab, K., 2017-2018. *The Global Competitiveness Report,* Geneva: Klaus Schwab, World Economic Forum.

Senge, P. M., 1990. *The Fifth Discipline: the Art and Practice of The Learning Organisation.* New York, NY: Doubleday.

Senge, P. M., 2006. *The Fifth Discipline: The art & practiceof the learning organisation.* 2nd ed. USA: Currency.

Sengere, L., 2017. *Industry calling slashing zesa tariffs reasonable request.* [Online] Available at: https://www.techzim.co.zw/2017/11/industry-calling-slashing-zesa-tariffs-reasonable-request/

[Accessed 12 March 2018].

Shih, H. A. & Chiang, Y. H., 2005. Strategy alignment between HRM, KM and corporate development. *International Journal of Manpower,* 26(6), pp. 582-603.

Simon, M. K., 2011. *Dissertation and scholarly research: Recipes for success.* Seattle, WA: Dissertation Success, LLC.

Skyrme, David J. (Dr.),, n.d. *Knowledge Management: Approaches and Policies. Paper available at.* [Online] Available at: http://www.providersedge.com/docs/km_articles/KM_-Approaches_and_Policies.pdf_

Strati, A., 2007. Sensible knowledge and practice-based learning. *Management Learning,* 38(1), pp. 61-77.

Sun, P. Y. T. & Scott, J. L., 2005. An investigation of barriers to knowledge transfer. *Journal of Knowledge Management,* 9(2), pp. 75-90.

Szulanski, G., 1996. Exploring internal stickiness: impediments to the transfer of best practice within the firm. *Strategic Management Journal,* 17, pp. 27-43.

Techzim, 2019. *Techzim.* [Online] Available at: https://www.techzim.co.zw/2019/06/zesa-board-members-fired-2-months-after-their-appointment/ [Accessed 18 July 2019].

Teece, D. J., 2007. Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal,* 28(13), pp. 1319-1350.

Teece, D. J. & Pisano, G., 1994. ”The dynamic capabilities of firms: an introduction.”. *Industrial and Corporate Change,* Volume 3, pp. 537-556.

Teece, D. J., Pisano, G. & Shuen, A., 1997. Dynamic capabilities and strategic management. *Strategic Management Journal,* 18(7), pp. 509-533.

The Herald, 2019. *Zim faces massive load-shedding •$43m power import arrears cited •Eskom threatens action in 8 days*, Harare: s.n.

Tiwana, A., 1999. *The Knowledge Management Toolkit, Practical techniques for building a Knowledge Management.* s.l.:Prentice Hall.

Trochim, W. M. K., 2006. *Research Methods Knowledge Base.* 2nd ed. s.l.:s.n.

Verona, G. & Ravasi, D., 2003. Unbundling dynamic capabilities: an exploratory study of continuous productinnovation'. *Industrial and Corporate Change*, 12(3), pp. 577-606.

Virkus, S., 2014. Strategic and Planning Issues of Knowledge Management. *Institute of Information Studies.*

Wang, C. L. & Ahmed, P. K., 2004. Leveraging knowledge in the innovation and learning process at GKN. *International Journal of Technology Management,* 27(6/7), pp. 674-688.

Wang, C. L. & Ahmed, P. K., 2007. Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews,* 9(1), pp. 31-51.

Wang, C. L., Senaratne, C. & Rafiq, M., 2015. Success Traps, Dynamic Capabilities and Firm Performance. *British Journal of Management,* Volume 26, pp. 26-44.

Wiig, K. M., 1993. *Knowledge Management Foundations: Thinking about Thinking- how People and Organizations Create, Represent, and Use Knowledge.* Arlington, TX: Schema Press.

Wilden, R., Gudergan, S. P., Nielsen, B. B. & Lings, I., 2013. Dynamic Capabilities and Performance: Strategy, Structure and Environment. *Long Range Planning,* 46(1-2), pp. 72-96.

Wong, K. Y., 2005. Critical success factors for implementing knowledge management in small and medium enterprises. *Industrial Management & Data Systems*, 105(3), pp. 261-279.

Wu, W. W., 2008. Choosing knowledge management strategies by using a combined ANP and DEMATEL approach. *Expert System with Applications,* Volume 35, pp. 828-835.

Yakhlef, A., 2010. The corporeality of practice-based learning. *Organisation Studies,* 31(4), pp. 409-430.

Yeh, Y. J., Lai, S. Q. & Ho, C. T., 2006. Knowledge management enablers. *Industrial Management & Data Systems,* 106(6), pp. 793-810.

Yin, R., 1984. *Case Study Research: Design and Methods.* Beverly Hills, Calif: Sage.

Yin, R. K., 2002. *Case study research: Designs and methods.* 2nd ed. Thousand Oaks, CA: SAGE.

Yuen, Y. H., 2001. *Overview of Knowledge Management in the Public Sector*. Singapore, Institute of Systems Science National University of Singapore.

Yu, S. H., Kim, Y. G. & Kim, M. Y., 2007. Do we know what really drives KM performance?. *Journal of Knowledge Management,* 11(6), pp. 39-53.

Zainal, Z., 2007. Case study as a research method. *Jurnal Kemanusiaan,* 9, pp. 1-6.

ZETDC, 2016. *zetdc.co.zw.* [Online] Available at: http://zetdc.co.zw/about-us/mission-vision-values/ [Accessed 20 March 2018].

Zhangazha, T., 2016. *ZESA, transformers and passing burden to customers.* [Online] Available at: https://www.herald.co.zw/zesa-transformers-and-passing-burden-to-customers/ [Accessed 13 March 2018].

Zhang, D. & Zhao, J., Jan - Mar. Knowledge Management in Organizations. *Journal of Database Management,* 17(1).

8 APPENDIX

8.1 APPLICATION FOR PERMISSION TO CARRY OUT RESEARCH AT ZETDC

6336 13th Avenue
Glen View 3
Harare

20 March 2018

Managing Director
ZETDC
26 Samora Machel Avenue
Harare
Zimbabwe

Dear Sir

RE: APPLICATION FOR PERMISSION TO CARRY OUT RESEARCH IN ZIMBABWE ELECTRICITY TRANSMISSION AND DISTRIBUTION COMPANY (ZETDC).

I do hereby apply for permission to carry out research in your company. My name is Blessed Sue Mhonderwa (student number 18297774). I am a Master of Commerce Degree in Informatics student at the University of Pretoria. In order to fulfil the requirements needed to complete my Master's Degree I am carrying out a research entitled - Knowledge Management for enhancing organisational performance: the case of the Zimbabwean electricity supplier. Survey questionnaires and interviews will be used to collect data in your company. The research is solely for academic purposes therefore all the information that will be gathered, will be used with confidentiality and no one will be identified in any written reports or publication.

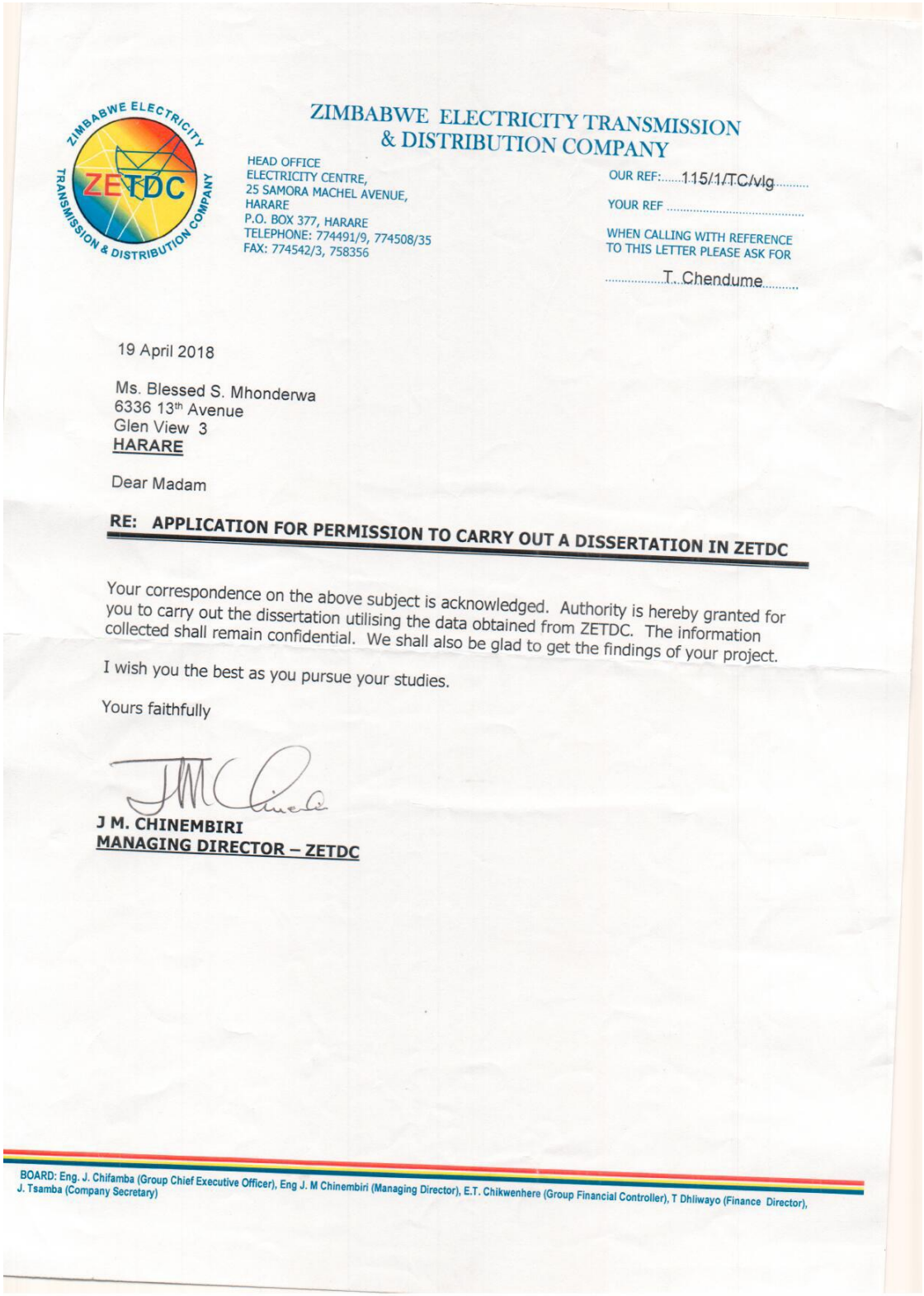
Your cooperation is important for this research as it will give the researcher first hand information in an endeavor to establish ways to improve knowledge management in the electricity supply industry so as to enhance organisational performance at ZETDC by investigating aspects related to knowledge management practices and its impact on performance in the electricity supply industry in Zimbabwe. If you have any questions please contact me on 00263 774 656 138 or email: beemhonds@gmail.com.

Your cooperation will be greatly appreciated.

Yours Faithfully

Blessed Sue Mhonderwa

8.2 APPROVAL FROM ZETDC



ZIMBABWE ELECTRICITY TRANSMISSION & DISTRIBUTION COMPANY

HEAD OFFICE
ELECTRICITY CENTRE,
25 SAMORA MACHEL AVENUE,
HARARE
P.O. BOX 377, HARARE
TELEPHONE: 774491/9, 774508/35
FAX: 774542/3, 758356

OUR REF: 115/1/TC/vlg
YOUR REF
WHEN CALLING WITH REFERENCE TO THIS LETTER PLEASE ASK FOR
T. Chendume

19 April 2018

Ms. Blessed S. Mhonderwa
6336 13th Avenue
Glen View 3
HARARE

Dear Madam

RE: APPLICATION FOR PERMISSION TO CARRY OUT A DISSERTATION IN ZETDC

Your correspondence on the above subject is acknowledged. Authority is hereby granted for you to carry out the dissertation utilising the data obtained from ZETDC. The information collected shall remain confidential. We shall also be glad to get the findings of your project.

I wish you the best as you pursue your studies.

Yours faithfully

J M. CHINEMBIRI
MANAGING DIRECTOR – ZETDC

BOARD: Eng. J. Chifamba (Group Chief Executive Officer), Eng J. M Chinembiri (Managing Director), E.T. Chikwenhere (Group Financial Controller), T Dhliwayo (Finance Director), J. Tsamba (Company Secretary)

8.3 RESEARCHER DECLARATION FORM

RESEARCHER DECLARATION

Hereby I, **Blessed Sue Mhonderwa** in my capacity as a **Master of Commerce in Informatics** student declare that,

1 Research subjects will be informed, information will be handled confidentially, research subjects reserve the right to choose whether to participate and, where applicable, written permission will be obtained for the execution of the project (see attached informed consent form).

2 No conflict of interests or financial benefit, whether for the researcher, company or organisation, that could materially affect the outcome of the investigation or jeopardize the name of the university is foreseen.

3 Inspection of the experiments in loco may take place at any time by the committee or its proxy.

4 The information I furnish in the application is correct to the best of my knowledge and that I will abide by the stipulations of the committee as contained in the regulations.

Signed: _____ Date: _____

8.4 RESEARCH CONSENT FORM

RESEARCH CONSENT FORM

TITLE OF RESEARCH PROJECT

Knowledge management in the electricity supply industry in Zimbabwe to enhance organisational performance.

Dear sir / madam

Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully and ask the researcher if there is anything that is not clear. If you decide to participate, please sign and date this consent form at the end and you will be given a copy of it.

My name is Blessed Sue Mhonderwa. I am a Master of Informatics degree student at the University of Pretoria. I am currently conducting a research to fulfil the requirements needed to complete my Master's Degree. This study seeks to understand how knowledge mangement practices and systems at Zimbabwe Electricity Transmission and Distribution Company can be harnessed to enhance organisational performance in the rapid changing environment in which it operates. This research is solely for academic purposes and your cooperation is important because it will give the researcher first hand information.

The researcher shall either conduct interviews or issue survey questionnaires at the organisation's site to gather data for the research. Interviews shall be scheduled with the participants at an agreed date and time and will be one hour long. Questionnaire participants shall respond to the questionnaires and return them to the researcher. English will be used for both interviews and survey questionnaires. Your participation in this study is voluntary. You may decline to answer any or all questions and you may terminate your involvement at any time if you choose. However, if you terminate before data collection is completed, your data will be returned to you or

destroyed. Terminating your involvement will not affect the relationship you have, if any, with the researcher.

For the purposes of this research, your comments and responses to interviews or questionnaires will be anonymous. Every effort will be made by the researcher to preserve your confidentiality including assigning code numbers for participants that will be used on all research notes and documents as well as keeping responses from interviews and questionnaires in a locked file cabinet in the personal possession of the researcher.

I have read and I understood the provided information and have had the opportunity to ask questions.

Signed: _____ Date: _____

Witness: _____ Date: _____

Researcher: _____ Date: _____

8.5 QUESTIONNAIRE

QUESTIONNAIRE

Dear Respondents,

As part of my Masters' research at the University of Pretoria, I am conducting a survey questionnaire that investigates aspects related to knowledge management practices and its impact on performance in the electricity supply industry in Zimbabwe. This research seeks to establish ways to improve knowledge management in the electricity supply industry so as to enhance organisational performance at Zimbabwe Electricity Transmission and Distribution Company. I will be highly obliged, if you would please complete the following questionnaire. Any information obtained in connection with this study will remain confidential and no one will be identified in any written reports or publication. If you have any questions please contact me on 00263 774 656 138 or email: beemhonds@gmail.com.

Thank you very much for your cooperation.

Blessed Sue Mhonderwa

University of Pretoria

Please put a tick in the appropriate box or write a comment in the spaces provided below.

SECTION A: BACKGROUND INFORMATION

1. What is your position in the organisation?

_____

2. How long have you worked in this organisation?

Less than 1 year [ ]
Between 1 and 2 years [ ]
Between 3 and 5 years [ ]
Over 5 years [ ]

3. How long have you been in your current position?

Less than 1 year [ ]
Between 1 and 2 years [ ]
Between 3 and 5 years [ ]
Over 5 years [ ]

SECTION B: GENERAL KNOWLEDGE MANAGEMENT

4. What is your definition of knowledge management?

_____

_____

5. Do you make use of the understanding that you acquire from past knowledge, experience, reasoning, intuition and learning to achieve organisational objectives?

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

6. What type of knowledge do you use to carry out your day to day operations?

o Knowledge which is personal and context specific that resides in the human mind, behaviour, and perception and can only be transferred through interactions

o Knowledge which is recorded and shared effortlessly that is documented in books, manuals among

o Both of the above

o Other please specify_____

_____

7. Do you feel like you are hired, evaluated and compensated for your contributions towards the development of the organisation's knowledge?

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

8. Do you have the strategies, processes and technologies used to acquire, select, organize, share and leverage an organisation's critical information and expertise with the aim of improving company productivity and decision quality?

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

9. What mechanisms are used to manage past knowledge and experience within your organisation?

_____

_____

10. The current technologies within the organisation upsurge the reach and scope of exchanging information among individuals or groups to enhance organisational performance.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

SECTION C: PART 1 - KNOWLEDGE CREATION

11. Everyone is involved in the creation of knowledge and everybody contributes to it.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

12. Top management takes active interest in knowledge creation and supports it continuously.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

13. How can knowledge creation be improved at ZETDC?

_____

_____

SECTION C: PART 2 - KNOWLEDGE SHARING

14. Do you have an open, encouraging and supportive culture that promotes the sharing of knowledge, employee learning, critical thinking and risk taking with new ideas at ZETDC?

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

15. People at workplace share their experiences and knowledge willingly.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

16. Does ZETDC provide incentives for knowledge sharing?

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

17. Formal channels for knowledge sharing exist like meeting, courses and tours.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

18. What are the limitations of knowledge sharing at ZETDC and how can knowledge sharing is improved within your organisation?

_____

_____

SECTION C: PART 3 - KNOWEDGE TRANSFER

19. ZETDC has well defined processes for creating, capturing and acquiring knowledge.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

20. Trust, reciprocity and openness among participants are key elements for knowledge transfer.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

21. How can knowledge transfer be improved within your organisation?

_____

_____

SECTION C: PART 4 – STORING KNOWLEDGE

22. Stored knowledge is quite important, relevant and latest, furthermore procedures are documented and centrally stored for ease of access across the organisation.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

23. Any other comments relating to knowledge storing.

_____

_____

SECTION D: ORGANISATIONAL LEARNING

24. The organisation's culture permits employees to make mistakes and value their contributions while learning from experimenting and experience.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

25. There are clear operational guidelines to help staff learning and encourage people to participate in a variety of informal learning opportunities.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

26. Hardware and software technologies are available to support employee learning.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

27. Policies or programs intended to improve worker retention exist?

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

28. How can employee learning be improved at ZETDC?

_____

_____

SECTION E: CULTURE

29. Corporate culture affects worker retention.

Strongly Agree [ ] Agree [ ] Neutral [ ] Disagree [ ] Strongly Disagree [ ]

30. How can corporate culture be improved to maintain employee retention?

SECTION E: KNOWLEDGE MANAGEMENT TECHNOLOGIES

31. Which of the following is the main channel that you prefer to use to obtain information?

Channel	**Strongly Preferred** (5)	**Preferred** (4)	**Neutral** (3)	**Least Preferred** (2)	**Very Least Preferred** (1)
Internet	[ ]	[ ]	[ ]	[ ]	[ ]
Intranet	[ ]	[ ]	[ ]	[ ]	[ ]
Customer relationship management	[ ]	[ ]	[ ]	[ ]	[ ]
Management Information System	[ ]	[ ]	[ ]	[ ]	[ ]
Expert Networks	[ ]	[ ]	[ ]	[ ]	[ ]
E-mail	[ ]	[ ]	[ ]	[ ]	[ ]
Video conferencing	[ ]	[ ]	[ ]	[ ]	[ ]
Data warehousing	[ ]	[ ]	[ ]	[ ]	[ ]
Browsers	[ ]	[ ]	[ ]	[ ]	[ ]
Content Management	[ ]	[ ]	[ ]	[ ]	[ ]
Knowledge Portals	[ ]	[ ]	[ ]	[ ]	[ ]
Data support system	[ ]	[ ]	[ ]	[ ]	[ ]
E-Learning	[ ]	[ ]	[ ]	[ ]	[ ]
Groupware	[ ]	[ ]	[ ]	[ ]	[ ]
Data management	[ ]	[ ]	[ ]	[ ]	[ ]

system					
Community of Practices	[ ]	[ ]	[ ]	[ ]	[ ]
Story Telling	[ ]	[ ]	[ ]	[ ]	[ ]
Internet	[ ]	[ ]	[ ]	[ ]	[ ]
Intranet	[ ]	[ ]	[ ]	[ ]	[ ]
Customer relationship management	[ ]	[ ]	[ ]	[ ]	[ ]
Management Information System	[ ]	[ ]	[ ]	[ ]	[ ]
Expert Networks	[ ]	[ ]	[ ]	[ ]	[ ]
E-mail	[ ]	[ ]	[ ]	[ ]	[ ]
Video conferencing	[ ]	[ ]	[ ]	[ ]	[ ]

32. Other channels, please specify

_____

_____

33. Can you briefly describe how you use that particular channel and what you use it for?

_____

_____

34. How would you rate technology infrastructure in your organisation?

Poor ○ ○ ○ ○ ○ ○ ○ ○ ○ Excellent

8.6 INTERVIEW QUESTIONS

1. What is your definition of knowledge management?

_____

_____

2. Does your organisation rely on historical knowledge and experience for its day to day operations?

_____

_____

3. How do you create, store, share and manage the historical knowledge and experience for day to day and future use?

_____

_____

4. What are some of the challenges that you face in creating, storing, sharing and managing the historical knowledge and experience?

_____

_____

5. Do you have a knowledge management system in place? What are some of the challenges of the current knowledge management system and how can it be improved?

_____

_____

6. Does the organisation understand the revenue-generating potential of its knowledge assets and has it developed strategies for them?

_____

_____

7. Is managing employee's knowledge central to the organisation's strategy?

_____

_____

8. At which level of the organisation do you implement a knowledge management strategy?

☐ Company Level Business ☐ Unit/Division Level

☐ Department Level ☐ At all Levels

9. Is improving the overall organisational performance acknowledged as a major objective of knowledge management?

_____

_____

10. Is knowledge linked to financial results within your organisation? Does the organisation have a specific set of indicators which include both financial and non financial indicators to manage knowledge?

_____

_____

11. Does your infrastructure promote innovation, creativity, knowledge sharing and learning?

_____

_____

8.7 ETHICS APPROVAL

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology
Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

Reference number: EBIT/71/2019

Miss BS Mhonderwa
Department: Informatics
University of Pretoria
Pretoria
0083

Dear Miss BS Mhonderwa

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Approval is granted for the application with reference number that appears above.

1. This means that the research project entitled "Knowledge Management for enhancing organisational performance: the case of the Zimbabwean electricity supplier." has been approved as submitted. It is important to note what approval implies. This is expanded on in the points that follow.

2. This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Research Ethics Committee.

3. If action is taken beyond the approved application, approval is withdrawn automatically.

4. According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.
5. The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.
Prof JJ Hanekom
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY