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FACULTY OF COMMERCE

**The Influence of Culture on Capturing and Management of Tacit
Knowledge in the Energy Sector**

By

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Gweru, Zimbabwe

Dissertation submitted to the Midlands State University in partial fulfilment of the requirements for the award of the Master of Commerce in Strategic Management and Corporate Governance Degree

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DECLARATION

I, Student Number R0645357, declare that this is my original work and has not been submitted to any other learning institution other than this submission to the Midlands State University in Zimbabwe for academic purposes.

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This project was carried out under my supervision and is hereby submitted with my approval as the appointed Supervisor.

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DEDICATION

To my husband and my son for the time they were deprived of attention while I was working on this project; and to my parents for laying the correct foundation that has taken me this far.

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To my supervisor , I would like to express my gratitude for the useful comments , remarks and engagements with regard to this research .Without your help and guidance this dissertation would have not been possible.

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ABSTRACT

The cost of energy has a significant bearing on the performance of economy of societies , thus management of energy resources is crucial . The available energy resources should be utilised more effectively with minimum incremental costs. In Zimbabwe the electricity generation , transmission and distribution industry aims to ensure minimum disruptions in power supply . The industry is characterised with zero tolerance for mistakes as the equipment involved is highly valued. The industry therefore relies much on the specialised knowledge of employees. This calls for the need to capture their experience based knowledge so that it is not lost as employees leave the organisation due to diverse reasons. Culture of the organisation is critical as it forms the base for the success of efforts directed towards the capturing of such knowledge. This research sought to establish the influence of culture on the capturing and management of tacit knowledge with the aim of identifying possible avenues of improvement . Various authors are of the assertion that culture of an organisation should foster the retention of experiential knowledge . The study took a quantitative approach in which a sample size of 89 was selected from the possible 115 , triangulation of data collection methods was utilised in which questionnaires and interviews were used. The research findings show that culture influences the capturing and management of tacit knowledge . The study concludes which recommendations which can be used to address cultural inertia and ensure that experiential knowledge loss is minimised.

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ACRONYMS

IPPs	- Independent Power Producers
NCC	- National Control Centre
OEM(s)	-original equipment manufactures
ZESA	-Zimbabwe Electricity Supply Authority
ZPC	- Zimbabwe Power Company
ZEDTC Company	-Zimbabwe Electricity Transmission and Distribution
ZENT	- ZESA Enterprises

DEFINITION OF KEY TERMS AND ACRONYMS

Apprenticeship - A system of training - on the job and often accompanied with classroom work and reading.

Communities of Practise – networks of people with a shared concern or passion regarding a specific topic and who expand their knowledge and expertise in their areas of expertise .Davel abd Snyman (2005)

Culture - is defined as “a complex entity of values , beliefs, behaviour norms, meanings and practices shared by personnel within an establishment “ , Robbin(2004)

Knowledge sharing - a communication process in which one or two parts of the organisation participate in knowledge transfer to develop new technologies , new products

Knowledge creation - a deliberate generation of knowledge through a concerted effort by any organisation to acquire relevant knowledge through external and internal means. It is also regarded as an organisational social and collaborative dynamic process of interactions between explicit and tacit knowledge. Prusak and Davenport (1998)

Knowledge application–process through which effective storage and retrieval mechanisms facilitates a firm’s easy access to knowledge (Lin and Lee 2005)

Knowledge harvesting – capturing of knowledge from retiring staff.

Knowledge Management - a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organisational performance . (O’delland Grayson 1998)

Knowledge Worker - an employee with a high degree of expertise , education or experience and the primary purpose of their jobs involves the creation, distribution or application of knowledge.

Tacit Knowledge - this refers to knowledge that is unwritten, hidden, unspoken knowledge held by an individual and gained through practical experience or insight, emotions and intuition.

Explicit Knowledge- refers to knowledge that is documented in reports, manuals and procedures and this type of knowledge an organisation can easily make reference to and share the information.

CHAPTER I

INTRODUCTION

1.0 Introduction

Management of tacit knowledge has become a topical issue for organizations as part of the knowledge continuity management. Knowledge continuity management ensures that there is no loss of knowledge when an employee leaves the organisation due to termination or retirement .Dalkir (2011) . Tacit knowledge is regarded as a source of sustainable advantage which results in business continuity. This is mainly due to the fact that tacit knowledge is ‘sticky’ and mainly experiential. Sauk Hau et al (2013) .Globalisation has posed a need for companies in different geographical locations to share knowledge. Differences in time zones and national cultures complicates the exchange of the tacit knowledge. For example national cultures of India, Pakistan, China and Japan are hierarchical and sharing of knowledge is likened to sharing of power. This is sharply contrasted to national cultures in Germany , Europe and America, Malik and Malik (2008)

Africa has fragmented cultural orientations due to colonization and economic history resulting in fragmented knowledge which needs to be harnessed for African companies to compete globally. Haldin- Herrgard (2000). As organizations develop, national cultures are taken into cognisance and efforts to cut across these cultural boundaries are sought. The energy sector in particular power generation and distribution involves players from different parts of the world. Experiences have to be shared between these players regardless of cultural differences. Experiential knowledge is sought from original equipment manufacturers (OEMS) like Alstom France, Alstom UK, Alstom India. This research sought to analyse how the capturing of tacit knowledge in the energy sector is influenced by culture given the above context . The study focused on power generation and distribution.

This chapter outlines the general direction of the research. To start with, the background of the study which provides a root cause analysis of the problems found in the sector. The background of the research is summarized in the problem statement. Thus the problem statement highlights the problems to be addressed by the research. Research objectives and research questions are then derived from the problem statement. These then define the aim or purpose of the research. The practical and theoretical significance of the research is also outlined in this chapter. This is followed by the scope of the study which provides the limitations, delimitations as well as the assumptions of the research.

1.1 Background

The need for unique knowledge or talent has seen power utilities employing various strategies of ensuring that the organizations have the requisite skills for proper execution of duties. A well knowledgeable and seasoned employee is normally tasked to do jobs which require zero tolerance to errors as any mistake will be costly due to the value of equipment involved. Apprenticeship programs, employee rotations and learning communities are some of the strategies used for acquisition of the unique knowledge. Fernandez (2004).

In ZESA subsidiaries the apprenticeship program is a four year program structured in such a way that the first year is college training and the other three years are for practical learning. An apprentice is normally attached to a qualified artisan who has experience in that particular area. This covers fields like Electrical, Mechanical, Civil and Control and Instrumentation.

A similar programme is carried out for operators, in which the turbine trainees undergo a three year training programme, one year at college and the other two for practical experience. There is also the scholarship programme where university students are attached during their vacation and then undergo a two year post graduate traineeship program. All these trainees have the opportunity to go to a hydro power station, thermal as well as distribution in order for them to gain the relevant knowledge. The purpose of rotating the trainees in the various sections of the power utility is to ensure that the trainees have

relevant knowledge regarding all sections of the utility. Experiential knowledge is passed to the trainees as they work closely with experienced artisans, technicians and engineers.

Companies in this sector also have to continuously adapt to the environmental changes and capturing of experiential knowledge is imperative as companies restructure as well as when employees retire. Ashworth et al (2007) highlights that half of the workforce in power generation and transmission industry will become eligible for retirement in the next 10-15 years making the need to capture experiential knowledge more important. Forty-eight percent (48%) of the staff at ZPC Kariba Power Station will retire in the next 10-15 years .

The nature of the employees who are in the Power Generation and Transmission Industry are mainly technical , who are highly knowledgeable and there is an ageing population such that knowledge can be lost through retirements . Employee turnover is low due to the current economic environment hence the increased tenure were an employee can serve an organization for 40 years. Thus tacit knowledge capturing is of paramount importance in this sector . For every project carried out in ZPC and ZEDTC, after action reviews are carried out. The organization also pays for affiliation fees for engineers to the Zimbabwe Institute of Engineers and the Zimbabwe Engineers Councils. This help in the creation of communities of practice which allow for sharing of tacit knowledge. Engineers and artisans are paid retention allowance and their long service is also recognized through Long Service Awards .

ZESA subsidiaries therefore continue to dominate the industry even after government's licensing of about 20 Independent Power Producers (IPPs). The IPPS have failed to pose significant competition to ZESA subsidiaries mainly due to the huge capital investment, intensive infrastructural outlay and specialized knowledge required. The power generation and distribution industry fits well to Miller et al's (2016) notion of knowledge intensive organizations. A knowledge intensive organization is an organization which relies heavily on knowledge or expertise related to a specific technical discipline or functional

domain. It is imperative for ZESA and its subsidiaries to invest in capturing tacit knowledge as this is not easily imitated.

The power generation and distribution industry has evolved over decades with knowledge being transferred at different levels of development. The workers in this industry are highly knowledgeable and are also highly qualified. In the period of the economic downturn of 2008 ZESA lost quite a significant number of highly skilled engineers and technicians. Experiential knowledge was lost as these workers left the organization. In 2009, the organization had to call back these workers with offer of better packages. Thirty percent (30%) of the skilled labour had left the organization. As alluded before, this industry has evolved over time, such that there is an ageing population hence the risk of knowledge loss due to retirements. The research therefore focused on improving capturing and management of tacit knowledge given the above background. Experience normally results in improved performance. Gubbins et al (2012).

Edward (2011), asserts that knowledge is central to the strategy and operations of organisations in the energy sector. Organizational learning is paramount in power generation as this is a high hazard environment. The power stations are high risk areas for example ZPC Kariba South Power Station has a high risk of flooding with a risk factor of five (5). Other risk associated with the power station are, fire and explosions, dam failures, low water lake levels, earth movements among others.(ZPC Risk Register 2016). Reliability of the plant is more important than efficiency.

In the power generation and transmission industry there is not much autonomy in making decisions owing to the fact that the industry is highly critical to the success of the nation. Approval has to be sought from NCC for all works that involve stopping a machine (units) as well as closure of a substation. There are statutory guidelines which should be followed when such works are to be carried out. This has shaped decision making, structure and communication in the industry. Culture in the sector is mainly hierarchical and this results in knowledge hoarding. As postulated by Rao P.S (2010), public sector companies are associated with strong cultures, which do not allow for

competitiveness. They are usually mechanistic characterized with hierarchies, control, formalization, flow of authority and communication from top to bottom. The researcher therefore assessed how the components of culture are a challenge for effective capturing of tacit knowledge as well its management.

The employees who are found in this industry can be categorized into two. On one hand we have the older employees who do not have educational qualifications but have a wealth of practical experience. On the other hand we have highly qualified engineers and technicians with excellent academic qualifications who need to learn from the older employees. Davim et al (2014) indicate that knowledge hoarding is common where there is competition and knowledge is regarded as power. They further opined that the most common type of knowledge hoarding in these circumstances is partial knowledge transfer where sharers only share on selected circumstances rather than its entirety. This normally occurs where there is a belief that knowledge is a prerogative of particular groups. Van Genderen (2014) also concurs and alludes that knowledge hoarding occurs where it represents power, is generated and accessed by the privileged and sharing of knowledge occurs within influential and stratified layers and trust also plays a role in the process.

Sauk Hau et al (2013) observes that there is free sharing of knowledge where reciprocity is high. Reciprocity is the indebtedness of the receiver of knowledge to transfer an equivalent knowledge to the provider. Thus if the older employees and the younger employees work together and freely share their knowledge tacit knowledge will be captured guaranteeing the firm phenomenal results. As cited by Jones and Leonard (2009), knowledge hoarding can hurt the company and employees should be encouraged to collaborate and share knowledge rather than being knowledge gatekeepers

1.2 Problem Statement

ZESA like all other organisations experience knowledge loss as a result of employee attrition due to termination, resignation, retirement and transfer. Even an economic boom poses a challenge to ZESA as experienced engineers and technicians

abandon the organisation for greener pastures. The exit of an employee (engineer or artisan) result in talent loss as the equipment handled by the employees offers them experience and exposure which cannot be substituted otherwise and this becomes a great loss of knowledge to the company. Also when employees depart , they also depart with who they know, their colleagues at work. The networks established during an employee's course of work both internally and externally are important for the functionality of the organisation. It is very costly to keep a very large number of apprentices or trainees in training to replace those leaving due to inadequacies in the organisation's conditions of service or other reasons. The research aimed to foster ways of effective capturing and management of tacit knowledge as a way of ensuring that tacit knowledge is not lost when employees voluntarily choose to leave the organisation or upon the time of retirement.

1.3 Objectives

The following objectives were developed to guide the conduct of the research study

- To define and determine the purpose of tacit knowledge in an organization
- To ascertain the strategies used to capture tacit knowledge in the industry.
- To assess the organizational cultural factors that foster tacit knowledge management.
- To evaluate the interplay between culture and tacit knowledge capturing and management.

1.4 Research Questions

The following questions were crafted to give guidance to the research process:

- What is tacit knowledge?
- What is the purpose of tacit knowledge in an organization ?
- What are the systems used to capture and store tacit knowledge in the industry ?

- How is tacit knowledge affected by organizational cultural factors?
- What is the relationship between culture and tacit knowledge management?
- How can the capturing and use of tacit knowledge be improved in any organisation?

1.5 Significance Of The Study

1.5.1 Practical Significance

The study benefited the industry in proffering an analysis of how tacit knowledge can be captured and managed. The findings of the research are to be used to find solutions to improve tacit knowledge management in the industry. The research helped in identifying challenges to capturing of tacit knowledge and proffer recommendations .

1.5.2 Theoretical Significance

Management of knowledge is pivotal in the long term success of organisations. Various research has been carried out on the subject of explicit knowledge . However there is little research on the subject of capturing and managing tacit knowledge in monopolised organisations which are highly technical. The research provide results which benefit other monopolised industry and help them improve in capturing tacit knowledge .

1.6 Delimitation

1.6.1 Time Delimitation

The research focuses on data gathered from the sampled companies in the industry covering period 2011 to 2016 . However the period 2008 to 2009 was referred to as the employee attrition which occurred during this period has bearing on the current trends in the sector.

1.6.2 Geographical Delimitation

The research focused on the energy sector in particular ZESA subsidiaries. These are ZPC Kariba South Power Station (hydro) , ZEDTC Kariba responsible for the 330kv and stepping down current into the national grid and ZEDTC Northern (Chinhoyi) , responsible for transmission and distribution at a regional level.

1.6.3 Conceptual Delimitation

The thrust of the research was on the capturing and management of tacit knowledge in Power Generation and Distribution Industry. The researcher made reference to research by other scholars throughout the project.

1.7 Limitations

This limitation section of the research study describes situations and circumstances that could have affected or restricted the methods and analysis of research data. Limitations are influences that the researcher cannot control (Denscombe (2010)). They are shortcomings, conditions or influences that cannot be controlled by the researcher that places restrictions on the methodology and conclusions. 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 authority had to be sought from the relevant authorities in order to be allowed to carry the research and promises of not compromising confidentiality had to be made.

1.8 Assumptions

According to Simon (2011) , assumptions in an area of study are things that are somewhat out of the researcher's control, but if they disappear then the study would become irrelevant. The following assumptions were identified as critical to the research study. The researcher assumed that, the information

gathered from the sample population stands to be accurate and timely information. It was assumed that the statutory guidelines and the economic environment remain the same during the period of carrying out research.

1.9 Chapter Summary

The Chapter introduced the study , its background as well as the problem statement highlighting the importance of carrying out the research . The delimitation and limitations of the study were also outlined in this chapter.

CHAPTER II

LITERATURE REVIEW

2.0 Introduction

The researcher reviews work conducted on the capturing and management of tacit knowledge with a particular interest to assess the influence of culture on the tacit knowledge capturing process. The literature review aims to justify the present study as there is a gap in literature. The subject of tacit knowledge is relatively unexplored compared to research on explicit knowledge. The researcher observes that the two forms of knowledge are complimentary and they support each other to ensure effectiveness. The literature review defines knowledge management, the two typologies of knowledge (tacit and explicit), culture in organisations, the conceptual framework and empirical studies conducted in the construction industry. The literature to be reviewed in this chapter acts as a benchmark for research findings.

2.1 Knowledge and Its Development

According to Bernstein J.H (2011), knowledge is associated with the concept of intelligence which is constructed based upon four pillars, which include: data in the form of raw facts, information, knowledge, and wisdom. The raw facts appear as symbols which get collected by human senses for the purpose of processing and conversion into meaningful information and others can use it as input in their own process. Stern (2001). An accumulation of information which is properly arranged forms knowledge and the distinction is the fact that can be used and applied and where it is correctly understood it can enable progress to be achieved. Nonaka and Takeuchi (1995). The capacity of individuals to harness and apply knowledge is generally termed wisdom which is a heightened level in terms of being able to derive insights and to advance forward by applying and even creating new knowledge frontiers using information. (Makhifi 2011)

Davernport and Prusak (1998) asserts that knowledge is a result of the interaction of humans with information. There is a variation in individuals' interactions with information and this normally leads to different interpretations based on the current abilities and the previous experiences of the individual. Nagel (2014) concurs by positing that existence of knowledge depends on the knower that is the knowledge is present with the individual once the individual is removed they go away with their knowledge.

Research literature classifies knowledge as given in the following Table 2.1:

	Knowledge Class	Purpose of knowledge in that class
1	Classification-based Knowledge	Ability to classify information
2	Decision-oriented Knowledge	Choosing the best option
3	Descriptive knowledge	State of some world
4	Procedural knowledge	How to do something
5	Reasoning knowledge	What conclusion is valid in what situation?
6	Assimilative knowledge	What its impact is?

Table 2.1: Knowledge Classification

The classification of knowledge is useful in determining knowledge to be used in decision making in the different spheres. Figuring out concepts such as awareness, processed and accumulated information which has become knowledge is capable of being applied as wisdom or intelligence in different set ups and have been tried in order to simplify these facts. It has taken many years for intellectuals, philosophers and scientists who have tried to conceptualize awareness, information, knowledge and intelligence in various shapes, forms and situations. Unquestionably, many efforts have been made and many applications have been developed that resemble the capture and use of knowledge in various forms by using different methods. However, with the rapid increase in the amount of available information combined with the flexibility in accessing this information put forward the need for a concentrated effort to accelerate our utilization of information under a common framework.

As available technology advances our expectations and level of complexity embedded with knowledge, this situation increases the need for effective construction and efficient distribution. In time, Knowledge will gradually move into the sphere of the public domain, where it becomes “information”, while at the same time new knowledge gets created.

These definitions and concepts are very important to the knowledge which is usable in ZESA and its subsidiary which is quite specialized and highly technical. ZESA as an institution has its own school and the process of learning through the apprenticeship based methodology helps to define the relevant knowledge in the company as well as how it is used and passed on to the new entrants as part of the organisation’s culture. In recent years the number of accidental deaths of technicians has increased and this could be attributed to the lack of or ineffective methods of passing on the useful technical knowledge.

2.2 Definition Of Terms

The terms knowledge management, tacit knowledge , explicit knowledge and tacit knowledge capturing are defined in this review in order to achieve coherence of concepts and also to achieve a clear understanding of the subject . The researcher established the following relationship between the terms which is presented on the diagram below:

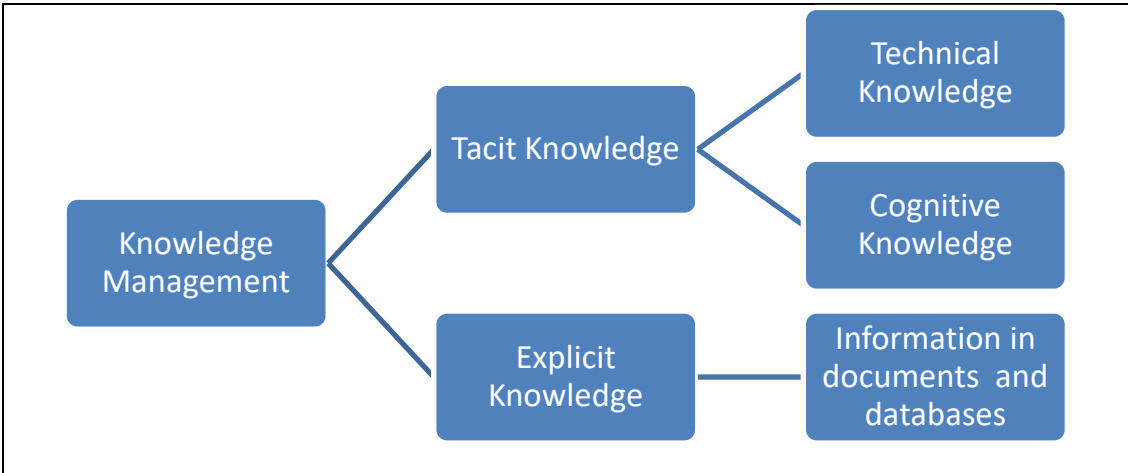


Fig 2.1 Relationship of Knowledge Management and Tacit Knowledge: Researcher 2017

2.2.1 Knowledge Management Defined

Holsapple (2003) alludes that knowledge management focuses on connecting people, providing a balance between stored, succinct and directly pertinent information. Menkoff and Yue Wah (2010) also defined knowledge management as: *“the totality of strategies aimed at creating a smart organization which is able to leverage its various information technology assets , to learn from past experiences whether successful or unsuccessful and to create new value through knowledge.”*

One can deduce from the definition above that knowledge management is aimed at ensuring that requisite knowledge is available in any organization whenever the need arises. Busch (2008) supports this notion through his proposition that knowledge management is aimed at enabling better access by employees to knowledge. Knowledge management is therefore the process by which organizations plan , control and coordinate knowledge activities for continuous improvement . The concept of knowledge management elevates the critical role of human resources (people) in an organization since knowledge is interpreted through humans . The knowledge found in an organization is termed human capital. An off shoot of knowledge management which is termed knowledge continuity management has since emerged which focuses on preservation of knowledge regardless of the form of employee attrition which occurs in the organisation. Urbancova and Venclova (2013)

Various authors concur that human capital has become a major source of competitive and sustainable advantage . Williams (2010) posits that the current transition from an industrial economy to a knowledge economy have seen the heightened role of human capital compared to financial capital. Power utilities have not been spared of the need for knowledge and as indicated earlier on utilities rely on unique knowledge and this knowledge has to be passed from one generation of employees to another generation of employees. The research established how organisations in the energy sector manage tacit knowledge aimed at achieving sustainability . Barnes and Milton (2014) concur with

Wamitu (2015) that organisations always have to replenish their knowledge base in order to continuously improve and become sustainable.

The economies of a number of Asian countries have grown significantly as a result of the conscious effort to factor in knowledge as a factor of production. Malaysia and Korea stand out as knowledge hubs and the success of knowledge management in these states is due to leadership support. Menkoff and Yue Wah (2010) alludes that the economy of Ghana and Korea had the same GDP in 1969 however today the economy of Korea has significantly grown due to success of knowledge as a factor of production.

Knowledge exists in two types that is explicit and tacit knowledge as was indicated earlier on. The distinction between the two knowledge typologies depicts the iceberg metaphor, Pathirage (2008). Explicit knowledge is the knowledge that is found on the surface while tacit knowledge is submerged. Although the research was focused on tacit knowledge, a definition of explicit knowledge was also given in this review as shall be supported by the knowledge creation model which shows that the two types of knowledge are complementary.

2.2.2 Explicit Knowledge Defined

Khuzarmah and Hassan (2012) writes that explicit knowledge is knowledge that can be articulated, codified and stored without much difficulty for example reports, standard operating procedures and manuals. Authors like Sanchez et al (2012), Chen and Mohamed (2010), Mayfield (2010) and Smith (2001) also agree to the notion that explicit knowledge can be easily codified, communicated and transmitted relatively easily. Explicit knowledge is found in databases, memos, notes and documents, journals. In power utilities, explicit knowledge is made available in documents, policies, safety handbooks and standard operating procedures. Mayfield (2010).

The policies and procedures used in ZESA subsidiaries are common across the various strategic business units. The safety handbooks (electrical and mechanical), the Administration Notes handbook and the routine operating

procedures are some of the forms of explicit knowledge found in this industry. Work by employees involved in condition monitoring is highly documented and this highlights a gap of knowledge as one analyses the speed at which one engineer is quick to trouble-shoot and carry out root cause analysis and proffer solutions within a short space of time compared to other engineers exposed to the same situation. Thus the researcher focused on tacit knowledge as a distinctive factor which separates novices from experts.

2.2.3 Tacit Knowledge Defined

Tacit knowledge refers to the 'know how' as ascribed by Polanyi (2000), we know more than we can tell. According to Goffin et al (2010) and Wamitu (2015), tacit knowledge is difficult to articulate, hard to record, based on experience and intimately connected to the way we carry out tasks and solve problems. It also involves, cognitive and technical elements, schemes, mental models and beliefs. Pathirage et al (2007) refers to tacit knowledge as understanding, capabilities, skills and the experiences of individuals often expressed in human actions in the form of thoughts, points of view, evaluation and advice generated and acquired through past experiences, individuals and repositories utilised for the benefit of individual and organisational development. Tacit knowledge is characterised by unstructured and hidden knowledge which is acquired over a period of time through experience, reflection and intuition.

The definitions above are common in the sense that tacit knowledge resides within an individual and is experience based. Khuzarmah and Hassan (2012) writes that tacit knowledge is highly personal, which makes it difficult to articulate or share with others. This type of knowledge can be obtained through experience, reflection and observation. Tacit knowledge can be categorised into cognitive and technical dimensions. Below is a diagram, adapted from Nonakas' (1994) work which show the components of cognitive knowledge and technical knowledge respectively.

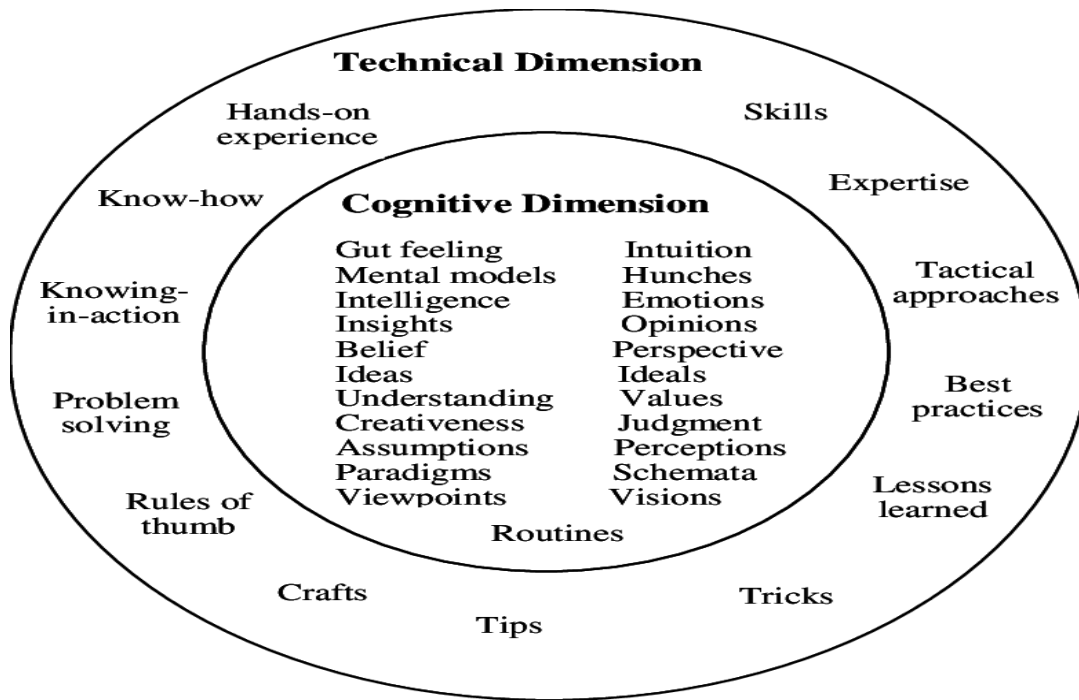


Fig 2.2 Tacit knowledge dimensions adopted from Nonaka (1994).

Managers rely on their cognitive skills in coming up with creative ideas and solutions, a craftsman like a potter relies on technical skills in designing a fine piece of equipment. The components of tacit knowledge reflect that forms of explicit knowledge can be copied however tacit knowledge of the employee differentiates how one then executes a task even when they are given the same manual to work from. The researcher adopted a definition of tacit knowledge as that type of knowledge which is personal and acquired through experience which includes the cognitive and technical dimension.

Carmel et al (2013), summarises the various forms of tacit knowledge which are:

- a) *Institutional memory*- knowledge gained from work experience. The institutional memory of ZESA in power generation and distribution is second to none in the industry.
- b) *Knowledge about business relationships and social networks* - experienced employees have developed relationships which makes it easier for them to execute tasks and ask for assistance.

- c) *Knowledge of business systems , processes and value chains* – Tenure of any employee is normally related to the knowledge that one possesses about the systems and processes which are found in the organisation.
- d) *Knowledge of governance* – governance focuses on the rules and controlling systems found in the organisation which can either be explicit or implied and one has to observe the rules of governance so as to operate effectively.
- e) *Subject matter expertise*– expert knowledge in relation to a particular subject or topic.

A similar categorisation of knowledge was done by Smith (2005) , in which tacit knowledge was classified into 3 categories. These are individual (latent), ego networks (relational) and organisational routines and processes.

Authors like Menkoff and Yue Wah (2010) posits that the classification of knowledge as tacit or explicit is cheap and pointless. They further go on to point out that knowledge management suffers from the lack of distinction between data , information and knowledge. The researcher is of the notion that there is a clear distinction between these two types of knowledge . Table 2.1 on the next page summarises the differences between the two types of knowledge by clearly outlining the nature , mechanisms for generating and sharing each type of knowledge . It also gives examples for each type of knowledge. The researcher notes that tacit knowledge as compared to explicit knowledge involves personal interaction of some sort and is not readily available as explicit knowledge. Organisations continuously seek strategies for sharing this tacit knowledge and achieving maximum utility from the explicit knowledge base which is found in the organization. One can therefore conclude that the two types of knowledge co-exist and are complimentary of each other . Nonaka et al (2000) alludes that the creation of knowledge is a result of the interaction of tacit and explicit knowledge and not from either tacit or explicit knowledge alone. The SECI Model was considered in assessing the interaction of the two knowledge types.

Goffin et al (2010) outline the differences between the two types of knowledge as shown below :

	Explicit Knowledge	Tacit Knowledge
Nature	<ul style="list-style-type: none"> • Easily identifiable • Relatively easy to share • Intrinsically incomplete ; lacks context and requires interpretation 	<ul style="list-style-type: none"> • Within-person knowledge • Difficult to articulate • Hard to share • Can be shared only indirectly
Typical Examples	<ul style="list-style-type: none"> • Information • Know-that • Theoretical knowledge 	<ul style="list-style-type: none"> • Intuition and insight • Practical intelligence , skills and practice • Know-how and heuristics • Rules of thumb • Mental models and beliefs
Mechanisms for generating and sharing	<ul style="list-style-type: none"> • Codification • Documentation • Databases and search engines • Blogs, wikis and intranets 	<ul style="list-style-type: none"> • 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

Table 2.2 Differences between tacit knowledge and explicit knowledge – Goffin et al (2010)

2.3 Knowledge Management Process

The knowledge management process is considered under this section as it forms the foundation for capturing of tacit knowledge. The knowledge management process aims at ensuring that knowledge in the organization is utilized . Key attributes of knowledge in the process are outlined by Dalkir (2011) as follows:

- *Knowledge is not consumed by its use* – this implies that when one applies their knowledge in any activity the knowledge is not depleted actually chances are it gets refined. For example when any artisan applies themselves in the rewiring of a stator core their knowledge is not consumed however it is improved .
- *Transferring knowledge does not result in one losing it* – The transfer of knowledge between employees does not result in loss of knowledge . Individuals can share their knowledge as in the case of a mentor and protégé , the mentor remains with his/ her knowledge.
- *Knowledge is abundant but the ability to use it is scarce* – Knowledge has to be relevant and applicable to a situation , this explains why specialized knowledge is sought after more than general knowledge .
- *Much of the organisation's knowledge walks out through out the door at the end of the day* - the employees bring out the value of knowledge in any organization and manuals and documents are meaningless if they are not interpreted and used by employees.

The four characteristics directed the researcher as the subject was explored. Knowledge management processes is comprised of three aspects which are knowledge creation, knowledge sharing and application. The knowledge which is created in any organization is assessed for relevance before it is shared and when knowledge is shared is then contextualized in a manner that is acceptable for the user , the contextualized knowledge is then updated resulting in creation of new knowledge . The process is continuous and repeats itself. Mohapatra (2016) summarises the process in the diagram which is shown below: .

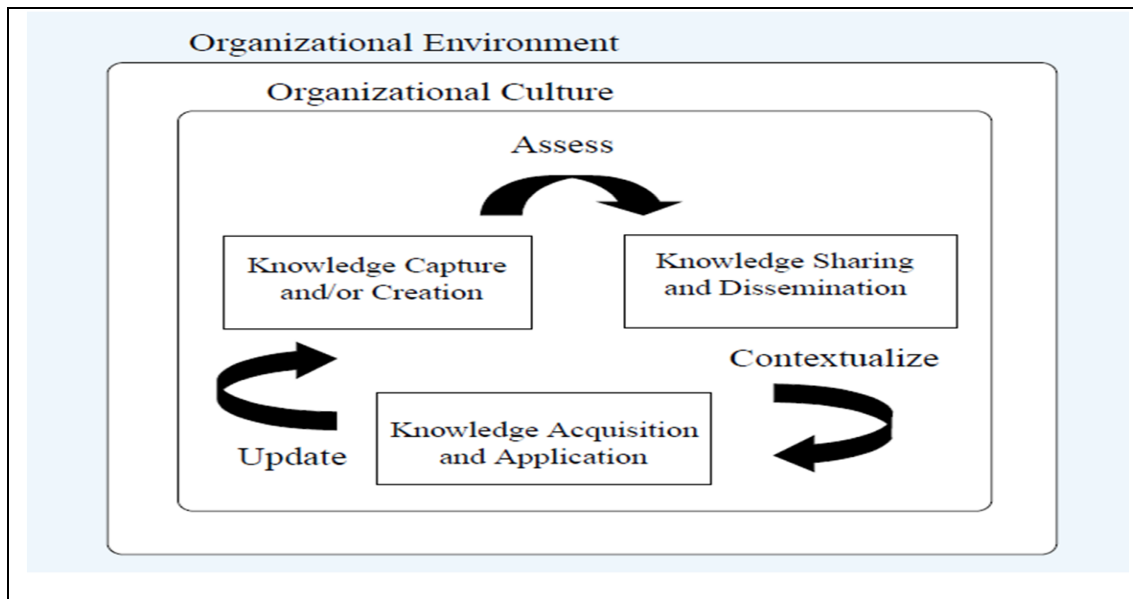


Fig 2.3: The knowledge Management Process: Source Mohapatra (2016)

Said (2015) and Easterby- Smith et al (2011) concur that knowledge creation or capturing is an organizational, social and collaborative dynamic process of interactions between explicit and tacit knowledge which results in creation of new knowledge. It involves codification of knowledge into forms which are suitable for transmission. According to Mohapatra (2016), knowledge capturing refers to the identification and subsequent codification of existing internal knowledge and know-how within the organisation and external knowledge from the environment. This knowledge is usually previously unnoticed. This combines existing knowledge and results in production of new knowledge. Organisations which create knowledge on an ongoing basis develop a capability which underpins organizational learning. This is necessary for competitive advantage. Stephanie and Nick (2014) encourages organisations to support speed of learning and ensure that every employee has access to knowledge regardless of their level in the organization whenever they need it.

Knowledge sharing involves a mutual exchange of tacit and explicit knowledge between individuals about products, procedures aiming to create new knowledge and expand the utilization value of the exchanged knowledge. In organisations where knowledge is regarded as power it is difficult to establish mutuality. For example competition between two sales people who cannot share trade secrets as each one of them wants to remain the best. The

knowledge that is created and shared within the organization is then applied to enhance productivity. The information is used in making decisions, solving problems, developing competency maps to place people in jobs and teams which contributes to the overall performance of the organization. Application of knowledge involves the actual use of knowledge.

The knowledge management process involves conversion of knowledge from one type to another. This involves the transition from tacit to explicit or vice-versa. The researcher considers the SECI Model of knowledge conversation as the conceptual framework for the study.

2.4 Conceptual Framework

The SECI MODEL of Knowledge Creation

The model was developed by Nonaka and Takeuchi. In this model two types of knowledge were identified, with tacit knowledge on one end of the continuum and explicit knowledge on the other end. Organisations aim to utilize the most of either knowledge in order to improve productivity. The model has four levels, socialization, externalization, combination and internalization. These form the knowledge spiral.

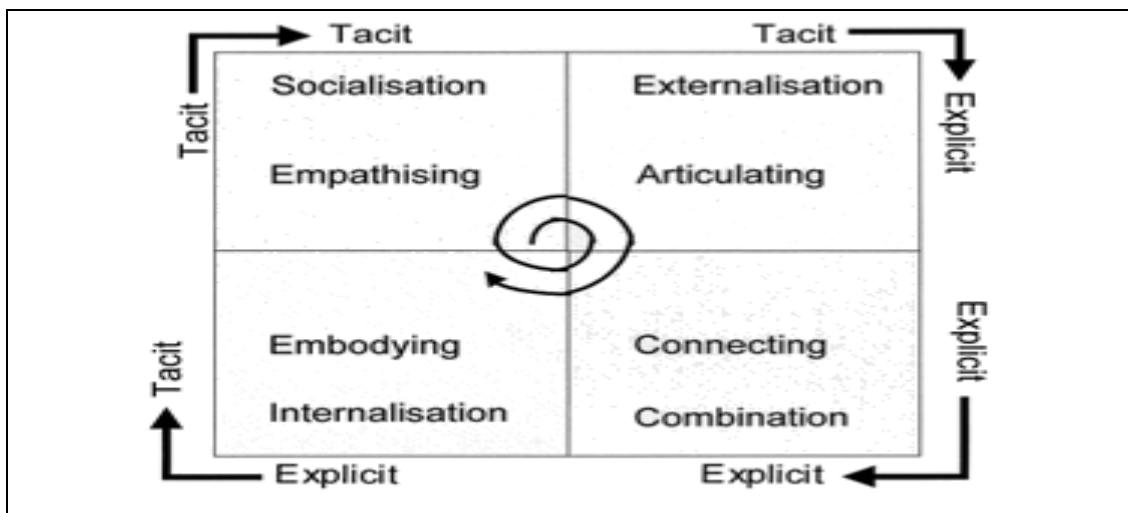


Fig 2.4- SECI Model: Nonaka and Takeuchi (1994)

Socialisation refers to social knowledge which resides from collective knowledge developed from the interaction between individual or a group. This knowledge is tacit knowledge. This knowledge is difficult to share. Nonaka (2000). Apprentices are usually attached to a senior artisan so that they learn the skills of the trade by observing them working as the tacit knowledge of the artisan is normally difficult to share. The trainees therefore learn by observing experienced workers execute their duties.

Internalisation is the level when an individual personalizes knowledge gained from reading documents, manuals and memos about their jobs. This knowledge is then shared again through socialization; Easa (2012). The process of internalization is achieved through knowledge application. For example as an operator follows through standard operating procedures for stopping a generator, the knowledge is internalised as one repetitively executes the same task. The operator then improves on their knowledge when they then realize a need to improve on the procedure. Combination refers to explicit knowledge which is collected from inside and outside the organization which is shared and combined with tacit knowledge to form new explicit knowledge. Externalisation is the articulation of tacit knowledge into explicit concepts or forms. Initiatives like reviews, master classes best practice exchange can be adopted by organisations so as to externalize the knowledge. The SECI Model guided the researcher in the study, and the research was based on the crucial need for capturing of tacit knowledge

2.5 Tacit Knowledge Capturing

Tacit knowledge capturing forms the main focus of this research. Dzekashu and McCollum (2014), alludes that tacit knowledge capturing is the extraction of knowledge or experiential matter from individuals groups or organisations for the benefit of the same, The process includes identifying, acquiring, refining, and storing the knowledge for dissemination to researchers or practitioners. Rothwell (2016), asserts that there is need for organisations to make deliberate effort to capture what people have learnt from experience and pass it on

before these people leave the organisation. This calls for accurately finding the right people who possess the knowledge and successfully leverage the tacit knowledge. The researcher considered one of Dalkir's (2011) knowledge characteristics, that knowledge is not consumed by its use and alludes that hindrances to the sharing which results in capturing should be minimum.

Every critical business situation offers a learning opportunity and once knowledge is tapped, it saves time in the future when a similar situation is experienced. Tacit knowledge capturing involves the transfer of problem solving expertise from some knowledge source to a repository or a program. Bengt (2015) proposes that tacit knowledge capturing is important as it prevents loss of practically mediated knowledge which might be difficult or impossible to replace. Gotsill and Bali (2010) also asserts that long tenured employees normally rank higher in their commitment to doing quality work, are loyal to the company, have good basic skills in reading and can be counted on in a crisis and have a reliable performance records and experience. Business leaders are concerned about retaining the expertise of their most tenured employees.

2.6 Strategies For Capturing Tacit Knowledge

Mayfield (2010) is of the view that there are fewer power generating companies that have procedures to facilitate tacit knowledge transfer thus employee turnover erodes organisational knowledge. There is need to come up with procedures which enable the knowledge held by an individual be converted into a format that can be perceived, absorbed and applied by others. Mechanisms which encourage interaction or socialisation like mentorships, apprenticeships and any forms of face to face interaction. Pathirage (2008) identifies human interactive systems, knowledge sharing network, Communities of practise, brainstorming, action learning and post project reviews as tacit knowledge capture techniques.

Girard et al (2015) and Stephan & Nick (2014) identify tools which are used in utility industries for capturing tacit knowledge. These include, after action reviews, elicitation interviews, newsletters, decision support system,

communities of practice, rewards and recognition . Communities of practice were introduced by Lave and Wenger in the 1990s , these are defined as a network of highly motivated and dedicated individuals with a common interest , beliefs and understandings of a particular topic that interact regularly for the purpose of sharing knowledge and fostering learning activities. The thrust of capturing tacit knowledge is to ensure lessons are captured and improve future performance of the organisation .

Mentoring programs is another strategy that is used in organisations . It allows a senior worker to directly transmit their experience , this can either be formal or informal . Formal mentoring can be used in fostering succession planning. Banacu et al (2013) . Rewards can also be used to motivate the sharing of tacit knowledge . Rewards are reflection of how the organisation's leadership values tacit knowledge sharing.

2.7 Challenges in capturing and management of tacit knowledge

The capturing of tacit knowledge in organisations calls for a supportive environment. The leadership style, structures , communication , rewards and customs and norms should be in line with the tacit knowledge strategy of the organisation. Factors like leadership , structure , rewards and communication form part of the culture of any organisation . Schein (1985) defined culture as the set of rules , norms , values, assumptions, symbols and beliefs that govern the behaviour of people in an organisation . According to Nor (2011) , policies, procedures, forms of interaction in the organisation and behaviour patterns are directed by the culture in the organisation. Keglovits (2013) , asserts that culture requires similar thinking , feelings and reactions shared through symbols of a group of people . Culture wields over the behaviours of the members of an organisation . There is need for values that favour sharing and social relationships.

Organisations which have a team orientation as well as a drive for innovation normally support sharing of tacit knowledge. Goals and targets for teams are achieved as team members share ideas . This also involves the sharing of knowledge. Harman and Harman (2005) , note that structures in an organisation

should allow for integrated and collaborative working . They further argue that ,departments in an organisation should not be discrete. This is because structures draw boundaries around activities of individuals and groups and define relationships between them . Structure and the innovative cultural orientation of the organisation are among the major factors which have had a great influence on the sharing of tacit in the energy sector. A hierarchical structure normally promotes knowledge hoarding , the senior person normally holds to information in order to remain powerful, Joia and Lamos (2010). Management is also at the centre of the whole process, trust and free flow of information with subordinates results in employees also being able to interact freely .

The values held in any organisation influences the success of the strategies for capturing the tacit knowledge. For example reward systems signals what behaviour and outcomes are most valued by management . Rewards can therefore sent a signal of management commitment to knowledge sharing , Banacu et al (2013) . Management can therefore send mixed signals through their reward system. Joia and Lemos (2010) identify the need for mutual trust, common language, relationship network , hierarchy, rewards and power as some of the factors which influence tacit knowledge sharing. Common language implies that the terms or words used should be understood by those who share knowledge .

Chang and Lin (2011) alluded that knowledge management process emphasises knowledge as being created , shared and applied through interpersonal social relationships and appropriate organisational culture. Knowledge management involves people management. In order to manage people who possess the desired tacit knowledge, there is need to take into consideration their cultural , social values , attitudes and aspirations. An environment of trust and openness is key to ensure learning is continuous and experiments are valued , appreciated and supported by everyone in the organisation. The researcher therefore sought to establish how tacit knowledge is captured and managed in the Power Generation and transmission industry and address the challenges faced in the process. The thrust of the research was that a negative cultural factor in an

organisation yields a negative tacit knowledge result . Thus in this study , culture was the independent variable while capturing of tacit knowledge was the dependent variable .

2.8 Empirical studies – tacit knowledge in the construction industry

The construction industry is fragmented and transient in nature Khuzarmah and Hassan (2012). Each project is unique to the other and project knowledge such as technical procedures, project related problems and solutions best practices and lessons learnt often reside in the heads of the team members. Tacit knowledge is considered as a strategic resource which proffers a renewable and sustainable advantage for the construction industry.

Chen and Mohamed (2010) , conducted a survey in the Hong Kong - Construction Industry which involved 99 organisations in search of empirical evidence to support that tacit knowledge is critical in the Construction industry . The study involved triangulation of methods thus questionnaires and interviews were utilised during the research . The findings were that there is need for a supportive environment which fosters human interactions for tacit knowledge management for example through encouraging innovations. Construction companies rely on employees' experience and intuition applied to technical processes which are normally labour intensive and management processes like problem solving (*cognitive and technical tacit knowledge*) . The research was based on the hypothesis that the intensity of tacit KM activities is more sensitive to the variance in organisational policy as compared to explicit KM

The implication of this study to the energy sector is that the operations are sometimes transient. Faults which are attended to by ZEDTC engineers and artisans vary in nature and size , the employees have to rely on their tacit knowledge for quick solutions. ZPC normally refers challenges of cabling equipment to ZEDTC as they have more expertise in this field interchangeably ZEDTC also refers challenges of their DG auxiliary plant to ZPC which have more experience in such equipment.

2.9 Knowledge Continuity Management

Knowledge is a unique resource for the individual and for the organisation as well. As such knowledge needs a systematic way of managing it as given in the sections above. Knowledge continuity is a thrust taken by organisations in ensuring that knowledge and experience is not lost when employees depart from the organisation but is passed on before their departure . Urbancova and Venclova (2013). Dalkir (2017) heightens the role of the human resources strategies in the capturing and sharing of knowledge. This follows a realisation that organisations need to continuously learn as there is a shortened lifespan of knowledge. The researcher's area of study can be regarded as a component of knowledge continuity management. This is because the study sought to foster the passing on of experiential knowledge by individual before their exit from being employed by the organisation.

Urbancova (2012) utilined the process of knowledge continuity as outlined below:

1. Carry out a knowledge audit and develop the knowledge profiles of individual employees
2. Identifications of the people with critical knowledge
3. Determine responsibility for knowledge continuity ensuring
4. Set the evaluation criteria
5. Design methodology for critical knowledge transfer
6. Operational knowledge transfer
7. Checking the fulfilment of knowledge continuity management goals and result evaluation.

The apprentice programme in the ZESA subsidiaries aims at knowledge continuity from the artisan to the apprentice. The artisan is thus identified as someone with critical knowledge and the four year apprenticeship programme is a methodology employed to pass on the critical knowledge . The evaluations carried out throughout the traineeship programme check the fulfilment of the goals of the training programme . This study however is focused on how the cultural climate allows the passing on of knowledge through the capturing and management of tacit knowledge.

2.10 Chapter Summary

The chapter defined knowledge management, tacit knowledge and explicit knowledge. It also outlined the conceptual framework which served to guide the research process. The researcher focused primarily on capturing and management of tacit knowledge. Several classes of knowledge were identified and a number of models on knowledge management process and systems were given, which served to highlight the importance of having a strong strategy for knowledge if it is not to be lost with resignations and natural attrition from the organisation. Some knowledge management case studies in the construction industry were reviewed to serve the purpose on demonstrating how knowledge in that sector was utilised, harnessed and shared. Whereas this chapter discussed the review of literature, the next chapter outlines the methodology for the study .

CHAPTER III

RESEARCH METHODOLOGY

3.0 Introduction

The chapter details out the research methodology which was employed for the study. The researcher adopted a quantitative methodology in which the influence of culture on tacit knowledge capturing and management was assessed through the causal relationship that exists between the two variables. According to Armstrong (2009) quantitative research is based on collection of factual data that is measured and quantified while qualitative research generates insights into situations and behaviour so that meaning of what is happening is understood. Detailed hereunder is therefore the research philosophy, the plan for carrying out the research (research design), the target population, sampling techniques and data collection methods. Strategies for ensuring validity and reliability of data collection methods are also outlined in this chapter. Ethical considerations of the study as well as data presentation and analysis methods are also highlighted in this chapter. Justification for particular methods adopted forms part of the research methodology outline.

3.1 Research Philosophy

This is a systematic search for existence, knowledge and values, reason and mind and language. BajPai (2011) and Saunders et al (2009) concur that research philosophy deals with the nature and development knowledge. The research philosophy forms the basic assumptions and views of the study hence influencing the methodology of the study. The researcher adopted a positivist approach in carrying out the research.

Positivism is when the researcher takes the stance of a natural scientist. Bryman and Bell (2015) alludes that the study of human behaviour should be conducted in

the same manner as studies in natural sciences. The researcher therefore focuses on observable facts and considers causality and fundamental laws. Positivism places emphasis on quantifiable observation which lead to statistical analysis. In the study explanations were sought to establish the causal link and relationship between culture and capturing of tacit knowledge. The study was deductive in nature.

Easterby- Smith et al (2012) and Dudovski (2016) have the same opinion that positivism seeks to credit or discredit a hypothesis based on data collected during the research. Positivism is an objective approach to research where research findings are observable and quantifiable allowing for generalisation of results .

Research Design

Saunders (2007) , Kothari (2004), Mitchell and Jolley (2013) agree that research design is a blue print for the collection , measurement and analysis of data. The online business dictionary points out that research design includes how data is to be collected , instruments to be used for data collection and the ways in which the data will be analysed. Research design contains clear objectives derived from the research questions specifying the sources from which the researcher collects data and consider the constraints likely to be faced and ethical considerations to be made. Cooper and Schindler (2003). The purpose of a research design is to ensure that evidence from the research addresses the research problem . It provides the logical framework upon which research is conducted.

Research design details out the plan, structure and strategy of investigation conceived so as to obtain answers to research questions. The researcher utilised triangulation of instruments for data collection that is interviews and questionnaires. Detail on triangulation is given later on in the chapter in the section on validity and reliability. The researcher adopted an explanatory approach to study.

For the purposes of this research, an explanatory approach was adopted. Explanatory research is concerned on how one variable produces change in other variable(s). In this research culture was the independent variable while capturing of tacit knowledge management was the dependant variable. The researcher aimed to explain and describe the relationship between culture and capturing of tacit knowledge.

3.2 Research Population

Research population refers to the complete group of elements relevant to the research study, Tran (2013). Levy and Lemeshow (2008) concur with Bhattacharjee (2012) that target population is the entire set of individuals to which findings of the research are to be inferred. The target population for the study comprises of employees in the selected organisations , ZPC Kariba , ZEDTC Kariba Depot and ZEDTC Northern Region Office. The target population is detailed in the table below.

Description	Population	Remarks
Managers	10	These were from ZPC Kariba, ZEDTC Kariba and the Northern Regional Office. Managers are responsible for strategy formulation and decision making
Engineers	24	The engineers were from different areas of specialization.
Artisans	40	Both electrical and mechanical artisans were to participate in the research and equal numbers were to be drawn from both ZEDTC and ZPC
Post Graduate Trainees	5	The Post Graduate trainees for this study were drawn from ZPC Kariba and Northern Region specifically those from various engineering disciplines
Turbine Operators	3	These were drawn from ZPC as they are found only in Power Stations
Trainee Turbine Operators	2	These were from ZPC as they are found only in Power Stations
Apprentices	23	These were from the indicated organisations and from various disciplines.
HR Personnel	8	This group involved both mainstream HR and training department from the organisations
Total	115	

Table 3.1: Target Population

It is normally not feasible to involve every potential participant hence the need for sampling. This is mainly due to fact the that smaller groups are manageable and are less costly than involving every potential participant. The sample need only to be representative to ensure that information obtained is applicable to the rest of the population.

3.3 Sampling Method

Sampling is the process of selecting a representative part of the population for the purpose of determining the parameters or characteristics for the whole population. Levy and Lemeshow (2008). The researcher utilised probability sampling in this research. The probability sampling method is based on random selection which is a controlled procedure that assure that each population element is given a non- zero chance of selection. Based on the information given in Table 3.1 , it can be noted that the population can be divided into subunits hence the researcher adopted stratified random sampling. Trochim (2006) alludes that a stratified sample is one in which the population is separated into non-overlapping stratas and then obtaining a proportional random sample for each group. Representation of the population is ensured through the stratification of the population. The population was divided into mutually exclusive sub populations.

3.4.1 Stratified random sampling

Stratified random sampling was important for this research as there was need for information from different levels of the organization. This helped the researcher to avoid selection error where some subunits are not represented. The managers, engineers , artisans and turbine operators constitute the mentors for the trainees (post- graduate trainees, trainee turbine operators, and apprentices) . Sampling is necessary as it lowers costs and results in greater speed of data collection.

3.4.2 Sample Size

A sample size is a subset of the population. The researcher calculated the sample size based on the following parameters, 5 percent margin of error at a confidence level of 95 percent and 89 participants were selected from the potential participants of 115. The proportional size for each strata was then calculated to achieve the required number of 89 participants.

Formulae for calculating sample size

$$x = Z(c/100)^2 r(100-r)$$

$$n = Nx / ((n-1) E^2 + x)$$

n is the required sample size

N is the population size

r is the fraction of responses researcher is interested in

Z(c/100) is the critical value for the confidence level

Calculation of the sample size

$$x = (1.96)^2(0.5)(1-0.5)$$

$$n = (115 \times 0.96) / ((114)(0.05)^2 + 0.96)$$

$$= 110.4 / 1.245$$

$$= 88.67$$

$$= \mathbf{89}$$

The sample focused mainly on technical employees as the industry requires industry specific knowledge. The sample population ranges from policy makers and implementers and also the mentors and the trainees. The managers, engineers, operators and artisans are responsible for passing on their experiential knowledge to the post graduate trainees, trainee turbine operators and apprentices. The sample population aimed to achieve representation of these mutually exclusive subunits in a bid to establish the influence of culture on the capturing of tacit knowledge in the energy sector. The sample size is shown on Table 3.2 on the next page.

Description	Population	Remarks
Managers	7	These were drawn from ZPC, ZETDC and ZENT. Managers are responsible for strategy formulation and decision making
Engineers	19	The sample aimed to have at least two of each of the following types of engineering field participate in the research <ul style="list-style-type: none"> • Systems Engineer • Protection Engineer • Sub- Transmission Controller • Mechanical Engineer • Planning Engineer • Civil Engineer • Shift Charge Engineer • Electrical Engineer • Control and Instrumentation Engineer
Artisans	31	Both electrical and mechanical artisans participated in the research and equal numbers were drawn from both ZETDC and ZPC
Turbine Operators	2	These were drawn from ZPC as they are found only in Power Stations
Post Graduate Trainees	4	These were drawn from ZEDTC and ZPC
Trainee Turbine Operators	2	These were drawn from ZPC as they are found only in Power Stations
Apprentices	18	These were drawn from the indicated organisations and from various disciplines.
HR Personnel	6	This group involved both mainstream HR and training department from the organisations
Total	89	

Table 3.2 – Sample Size

3.5 Sources of Data

Data collection is key in collection of information which is chosen for the research . Information can be collected from primary sources and secondary sources. Both primary and secondary sources of data were used in this research.

3.51. Primary Data

Primary data is data which is gathered by the researcher specifically for the research. It is original and relevant to the topic as it is intentionally collected

for the purpose of the research. The researcher gathered primary data using questionnaires and interviews. Some of the questionnaires were self-administered by the respondents while some were administered by the researcher. Face to face interviews and telephone interviews were also going to be utilised.

3.5.2 Secondary Data

Secondary data refers to data that have been already collected by someone else and is readily available, Trochim (2006). The researcher gained insight into the research problem from the secondary data which also helped support the research. This helped in contextualization of the research and the data was cheap to obtain and readily available. Policy documents and Statutory guidelines, company records, magazines (organizational like the Megawatt Bulletin) and journals were some of the sources of secondary data for this research.

3.6 Data Collection Methods/Techniques

Data collection methods refers to the methods used by the researcher to gather data about the research problem where data means raw facts. These raw facts are meaningless unless processed using data analysis. Two methods of data collection, questionnaires and interviews were used during the research. This is normally termed triangulation. Triangulation involves use of more than one method to collect data on the same topic, Kulkarni (2013). Different dimensions of the topic were captured from the two methods used as well as cross-validation of data from the two methods.

3.6.1 Questionnaires

Questionnaires involves collection of data systematically by obtaining answers on the key issues and opinions that need to be explored. The researcher used

both open ended and closed questions in order to gain more information as this allows for probing. Use of questionnaires enables the collection of information which could have not been volunteered using other techniques (sensitivity effect). This is because questionnaires allow for anonymity of respondents.

Brancato et al (2004) urges researchers to test their questionnaires with regards to question wording and content. Respondents can get confused of the overall meaning of the question if the questions are not properly worded. The researcher aims avoided skip instructions on questions as this could have resulted in respondents missing data or becoming frustrated. Questionnaires are usually easy to complete. Data collected using questionnaires is easy to quantify.

3.6.2 Interviews

The researcher made use of interviews to collect data in this case semi structured interviews were used. According to Armstrong (2009), semi structured interviews have predetermined areas of interest and key questions to be asked or information to be obtained have been identified. These questions may be leading. The field of study for the research problem was centred on culture and capturing of tacit knowledge. Hence the need to specifically gather information related to the subject. Two individuals from each strata was interviewed as people from each strata play a different role when it comes to capturing and management of tacit knowledge.

3.7 Validity and Reliability

Heale and Twycross (2015) define validity as the extent to which a concept is accurately measured. In other words the research instrument should measure what it is supposed to measure. Pre-test of the research instruments is key for the researcher in order to ensure that they measure what they are supposed to measure. Brancato (2004). Research instruments should have internal and content and external validity. This entails that the research instrument covers the entire

domain related to the variable. Thus inferences of research findings can be made on the population under study. This implies that the findings of the research can be generalised to the whole population.

Reliability is the extent to which the results are consistent over time. The research instruments should therefore produce the same results if it is used in the same situation Heale and Twycross (2015). Same results should be obtained if the instruments are used repeatedly. The instruments should therefore be stable thus ensuring consistency of results with repeated testing

3.8 Research Ethics

Cunningham et al (2012), stipulate that anyone who conducts research or interprets research findings must be sensitive to and mindful of moral principal and ethical reasoning. Based on this assertion the researcher observed informed consent of participants, that is respondents voluntarily participated in the research. Privacy and confidentiality of participants was observed. The researcher remained objective and also avoided stereotyping based on previous experiences.

3.9 Data Presentation and Analysis

Data analysis aims to deduce meaning from the data gathered by the researcher. Data can be quantified in a quantitative or qualitative manner. Considering the fact that the research is more quantitative in nature, data collected which is normally classified into two, categorical and quantitative (discrete and continuous) data is presented in tables. The Statistical Package for Social Sciences (SPSS) was utilised to accept or refute the fact that culture influences capturing and management of tacit knowledge. The researcher also acknowledges that data gathered from interviews cannot be easily quantified however the analysis focused on data collected from questionnaires and the findings from interviews was meant to augment the questionnaire findings.

3.10 Chapter Summary

The chapter outlined the methodology that was adopted for the research. It also covered the research design, sampling, data collection and analysis methods which were used for the research. The researcher also highlighted the justification for each method adopted in the chapter.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS AND INTEPRETATION OF FINDINGS

4.0 Introduction

This chapter sought to collate the researcher's findings during the period of research through presenting, analysing and interpreting for meaning and implications. The results of the research would be discussed stating the outcome of the research and the key findings leading to the appropriate recommendations which are detailed in the next chapter. As a means to that end the chapter was divided into a number of sections covering all the main subject areas or sections as presented in the questionnaire. Each section is introduced, analysed and the key findings are then detailed and finally discussed. The presentation takes the form of tables. The aim was to simplify the data for easier interpretation and understanding. Whilst the SPSS was used to undertake the calculations the results of which have been used in this chapter.

4.1 Questionnaire Response Analysis

The total number of questionnaires distributed to respondents was 94, out of which 90 were returned after they were duly completed. This constituted 96% response rate which by Kothari's (2004) standard proved to be quite successful and this left 4% of the questionnaires not having been returned to researcher, by the time the report was prepared. As given in the sample calculation the sample size earmarked was 89.

	RETURNS	NON-RETURNS	TOTAL
FREQUENCY	90	4	94
%	96	4	100

Table 4.1: Research Questionnaire Response Rate

The high response rate of 90(96%) as compared to the non-returned questionnaires 4(4%), was achieved through working closely with the human resources department of ZESA and strictly following through on all distributed questionnaires. A total of

89 had been determined as the appropriate number of samples from the 115 population of selected ZESA subsidiaries . The actual number of responded questionnaires was 1,1 % above the determined sample size which helped to place greater reliability and credibility on the findings and on any generalisations that can emanate from the conclusion.

4.2 Interview Response Analysis

There was a 100% interview response rate in which the researcher managed to conduct all scheduled interview . This was only possible as there was a minimised number of participants for the interviews. In essence two participants were targeted from each strata . The purpose of the interviews was for the researcher to augment findings from questionnaires and validate the results using a different approach

4.3 Findings

4.3.1 Relationship between level of education and the reasons for sharing knowledge .

The population for the study was comprised of participants with different levels of education , composite scores for the participants and the responses are shown in the table below :

By education	Mean scores				
	Degree	HND	Diploma	Certificate	Total score
5 .As an individual , you share knowledge so that:	N =30	N= 7	N=13	N=40	N =90
a. You get recognition	3.70	3.57	3.54	3.75	3.69
b. You are rewarded	1.73	2.43	2.84	2.23	2.17
c. You satisfy self –fulfillment needs	1.77	3.00	2.84	1.93	2.09
d. You support management strategic objectives	4.50	4.86	4.85	4.38	4.52
e. You enhance your career	2.13	3.42	2.08	2.15	2.23
Total composite score	2.77	3.46	3.23	2.89	2.94

Table 4.2 – Composite scores for the relationship between level of education and the reasons for sharing knowledge .

The table is a summary of various reasons for knowledge sharing in organisations it depicts that all participants scored a high (all ranging above 4) in that they share knowledge to support management strategic objectives.

Degreed participants had the least composite score and of note is that sharing knowledge to them was basically not based on recognition or rewards . This is possibly because their source of motivation for sharing knowledge is not based on the factors indicated above , however other factors like ensuring accomplishment of tasks quickly due to making available the needed knowledge. In order to strengthen individual resolve to share knowledge it is therefore important for the organisations to align their strategic objectives with all the workers as well as to give recognition to those employees who would have achieved excellently as per a defined criteria of the knowledge sharing process.

The researcher also carried out Fisher's exact test on rewards and recognition with regard to sharing of knowledge in which , a p value of 0,006 was obtained and this indicated that there was a strong association between the variables . The rewards in an organisation should communicate to the tacit knowledge capturing initiatives of the organisation.

4.3.2 Relationship between sharing of tacit knowledge and cultural factors which prevail in the organisation

The variables included in the survey sought to establish , how the presence or lack of these factors contributed to the sharing of tacit knowledge in the organisation. Authors like Marouf (2015) and Ryan et al (2010) asserts that the culture of the organisation should be supportive of the knowledge capturing initiatives . Thus management should take due care to ensure that a positive relationship of cultural factors and the tacit knowledge capturing process is maintained . Table 4.2 below summarises factors which are deemed critical in the capturing of tacit knowledge .

	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1	Sample Mean
How much do you agree that your core workers in the organization share tacit knowledge due to the following reasons :						
a. Trust that exist in the organisation	43 (48%)	34 (38%)	3 (3%)	9(10%)	1(1%)	4.21
b. The likelihood that colleagues will do likewise	36 (40%)	48 (53%)	2 (2%)	2 (2%)	2 (2%)	4.27
c. It is highly valued by management	22 (24%)	38 (42%)	5 (6%)	20 (22%)	5 (6%)	3.58
d. The organizational culture facilitates a learning environment	33 (37%)	42 (46%)	3 (3%)	6 (7%)	6 (7%)	4
e. People who share knowledge are regarded as experts	12 (13%)	26 (29%)	8 (9%)	24 (27%)	20 (22%)	2.84
f. It contributes to positive performance appraisals	13 (14%)	24 (27%)	7 (8%)	24 (27%)	21 (23%)	2.79

Source : Primary Data 2017

Table 4.3: Aggregate data in relation to prevailing cultural factors and knowledge sharing

There is need for workers to share tacit knowledge and it was imperative in the research to determine the reasons workers in the organization share tacit knowledge. 53% of the participants acknowledged that they shared their knowledge based on the fact that their colleagues would do otherwise . The other reason which was popular for fostering knowledge sharing was the reflection of the trust that exists in the organisation. The implication is that the concerned organisations need to understand the primary reasons for the easy of sharing tacit knowledge and then to invest into it for better organisational performance.

4.3.3. Purpose of tacit knowledge in the organisation

Organisations expect to bear returns in various activities they engage in. Understanding the purpose of tacit knowledge in the organisation was key for this study as it is indicative of the returns to be gained from the process. The table below evaluates the contributions of tacit knowledge to the success, competitiveness and innovativeness of the organisation. Organisations are in business to succeed , and survive through being competitive and innovative

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Sample Mean
How much do you agree that sharing tacit knowledge contributes to :						
a. The success of the organisation	50	40	0	0	0	4.56
b. Competitiveness of the organisation	45	45	0	0	0	4.50
c. Innovativeness of the organisation	41	45	2	1	1	4.38

Source: Primary Data (2017)

Table 4.4 Purpose of tacit knowledge in the organisation.

The participants mostly agreed that the sharing of tacit knowledge contributed to the success, competitiveness and innovativeness in the organisation as shown by the sample means of the variables which was above 4,3 for all the variables . This implies that even those who did not participate in the research , if they were to participate they were going to concur that tacit knowledge contributed to the success , competitiveness and innovativeness of the organisation

4.3.4 Strategies for capturing tacit knowledge

The aim of the research question on strategies for capturing tacit knowledge was to establish the strategies that are normally adopted by organisations. The researcher noted that a number of strategies can be explored to ensure that tacit knowledge is captured . Table 4.4 shows the strategies implemented for tacit knowledge capturing

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
How much do you agree that the following programs, procedures or systems are being utilized for capturing tacit knowledge					
a. After Action reviews	45	23	3	13	6
b. Operational Routine Procedures	35	37	1	8	9
c. Exit Interviews	5	10	5	37	33
d. Decision Support System	55	33	0	1	1
e. Newsletters	44	24	2	11	8
f. Emails	39	41	1	5	4
g. SharePoint	35	37	1	8	9
h. Communities of practice	5	10	5	37	33
i. Rewards	5	10	5	37	33
j. Stories	2	4	5	62	16
k. Recognition	6	14	3	44	23
l. Apprenticeship	45	45	0	0	0
m. Post- Graduate Traineeship	24	63	1	1	1
n. Turbine Operators Training	35	54	1	0	0

Source: Primary Data (2017)

Table 4.5: Implemented tacit knowledge capturing strategies

In terms of ‘after action reviews’ Table 4.5 in (a) reveals that 45 respondents strongly agreed, whilst 23 agreed, 3 were neutral, 13 disagreed and finally 6 respondents strongly disagreed. Conducting of these reviews was important and it needed to be continued as a way of learning from experience.

Operational Routine Procedures were strongly supported by 35 of the respondents as shown in Table 4.5 - (b) above and another 37 also supported, whilst one was neutral, 8 disagreed and the last 9 strongly disagreed. Operational routine procedures are critical for the process of learning and need to be written in easy to understand language and steps.

Exit Interviews are important in getting first-hand information from those leaving the organisations, however only 5 respondents strongly agreed, whilst another 10 agreed, 5 were noncommittal whereas 37 respondents disagreed and 33 strongly disagreed as shown in Table 4.5 (c). This pointed to the fact of the non-use of this tool to solicit the views of those leaving the organisations.

The use of decision support System was supported by 55 respondents who strongly agreed whilst another 33 agreed, none was neutral, and one each disagreed and

strongly disagreed. Decision support systems were shown to be very useful in tacit knowledge sharing and enhancement as shown in Table 4.5 - (d) above.

Newsletters were deemed useful in knowledge sharing as indicated by 44 respondents who strongly agreed, another 24 agreed, 2 were neutral, 11 disagreed and another 8 strongly disagreed. Newsletters must be continued and useful articles contributed as revealed in Table 4.5 -(e).

Emails used in communication were also useful transmitting tacit knowledge as 39 of the respondents strongly agreed another 41 agreed, one was neutral, 5 disagreed and another 4 strongly disagreed. Emails need to be encouraged due to their ease of use and pervasive nature.

SharePoint was supported by 35 and 37 respondents who strongly agreed and agreed respectively, one was neutral, whilst 8 disagreed and 9 strongly disagreed and this computer based sharing system needed to be continued and strengthened.

The community of practice given in Table 4.5- (h), rewards as shown in Table 4.5- (i), Stories as shown in Table 4.5 (j), and recognition as given in Table 4.5 (k) were not very popular as their support tilted 'towards disagreed' and 'strongly disagreed'. Empirical evidence from the construction industry shows that communities of practice are a reliable strategy for sharing knowledge. The African tradition of story –telling also suggests the passing on knowledge from one generation to the next through the sharing of stories

Apprenticeship as given in Table 4.5 (l), Post- Graduate Traineeship revealed in Table 4.5 (m) and Turbine Operators Training given in Table 4.5 (n) were very popular with the respondents as shown by the trends in the given tables. These activities need to be supported by the organisation in order to smoothen the process of sharing and using tacit knowledge.

4.3.5 Strategies to enhance value in traineeship programmes

There are various traineeship programmes which organisations employ to ensure that the necessary skills and knowledge are passed to the trainees. The research findings as summarised in the table below sought to whether there is need for the organisation to engage external stakeholders, have a clear policy guideline as well as limitations in the number of trainees

	Sample mean	Standard Deviation
How much do you agree that the organisation engages in the following activities in order to ensure value in the traineeship programs (Apprenticeship, Post Graduate Traineeship and Turbine Operator Training)		
a. Engagement of Educational Institutions/External training providers	4.2	0.43
b. Defined policy guideline for the program	4.38	0.47
c. Limitation on the number of trainees at a time in the organisation	4.5	0.49
d. Providing the trainees with a mentor and limiting the number of trainees assigned to one supervisor	4.18	0.44
e. Providing a platform for regular meetings between trainee and supervisor	2.99	0.34

Source: Primary Data (2017)

Table 4.6- Strategies to enhance value in traineeship programmes

The data is indicative of the fact that there is need for a defined policy for the traineeship programmes to produce value . This implies a limited number of trainees at a time in the organisation as well as well as the number of trainees attached to the supervisor . This is because policy documents normally define the parameters for executing a strategy and give a proper guideline to the whole programme. Participants where however of diverse views on the importance of providing a platform for regular meetings between trainee and supervisor as shown by a sample mean of 2.99.

4.4 Chapter Summary

The questionnaire response rate at 96.6% was deemed very good to yield generalizable findings. It was evident that the organisation lacked proper knowledge

management systems and appropriate knowledge management strategies which would allow smooth transfer of tacit knowledge remaining in the company. Organisational cultural inertia was found to play an important role in blocking proper tacit knowledge capturing processes. The inertia contributed to some of the serious challenges the organisation was facing such as plant break downs, fatalities of artisans and engineers from electric shocks and electrocution which come with lack of adequate knowledge and experience. The lack of proper knowledge management systems and strategies to deal with succession issues, have been attributable to the company's incapacity to allow for tacit knowledge management for it to be effectively passed on those remaining in the organisation. Whereas this chapter dwelt on the presentation and discussion of the findings, the next chapter will discuss the summary, conclusions and recommendations.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This is the final chapter of the research report which focuses on summarizing the research, making conclusions and recommendations deriving out of the research study 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 answering the questions posed at the beginning of the investigation. The recommendations are made based on the challenges that were identified during the research process and the findings to resolve the identified problem as stated in the statement of the problem.

The research study sought to answer the following questions which were crafted to give guidance to the research process and these were as given below:

- *What is tacit knowledge?*
- *What is the purpose of tacit knowledge in an organization ?*
- *What are the systems used to capture and store tacit knowledge in the industry ?*
- *How is tacit knowledge affected by organizational cultural factors?*
- *What is the relationship between culture and tacit knowledge management?*
- *How can the capturing and use of tacit knowledge be improved in any organisation?*

5.1 Summary of findings

The research design included a quantitative approach which involved triangulation of data collection methods and the population included all the ZESA employees from the selected ZPC and ZEDTC subsidiaries area which was 115 and the calculated sample was 89, however 94 questionnaires were used and 90 of them were returned to give a response rate of 96%. The research used a two stage process for sampling

which included first stratifying the population which considered the various employment layers in the organisation and secondly random sampling .The main finding was that the organisation had serious challenges in managing tacit knowledge which is critically needed for the survival of the organisation as well as for improved power generation and the safety of the remaining engineers and technicians.

5.1.1 Reasons for sharing knowledge

The results from the findings show that there is a relationship between knowledge sharing and rewards as well as level of recognition in the organisation as indicated by a pvalue of 0,006 following Fisher's exact test which was carried out .

5.1.2 Prevailing cultural factors and knowledge sharing

The study showed that there are a number of cultural factors which should prevail for effective knowledge sharing to occur in the organisation . This is reflected by for example by the finding that 53% of participants concurred that they shared knowledge on the basis that their counter parts would do so.

5.1.3 Purpose of tacit knowledge

The research findings reflected that tacit knowledge contributed to the success , competitiveness and innovativeness within the organisation as shown by the sample means which were above 4,3 for all the variables which were sampled .

5.1.4 Strategies for capturing tacit knowledge

Findings of the research revealed that there are number of strategies which are employed in a bid to capture tacit knowledge . About 90% of the participants concurred that traineeship programmes were being utilised in the organisation . This also goes for after action reviews and operational routine procedures. The results however pointed to poor utilisation of exit interviews as

strategy for capturing tacit knowledge as 77.8 % of the participants strongly disagreed or disagreed to use of such strategy .

5.2 Conclusions

Conclusions have been given with respect to each research objective and laid down in the following section.

Objective 1: To define and determine purpose of tacit knowledge

It was found that knowledge is information combined with experience, context, interpretation, and reflection. Tacit knowledge is experiential knowledge which is mostly difficult to articulate and is normally shared through strategies which involve social interaction. ZESA as an institution has its own school and the process of learning through the apprenticeship based methodology helps to define the relevant knowledge in the company as well as how it is used and passed on to the new entrants as part of the organisation's culture.

Knowledge management itself revolves around an intricate set of operational activities, which are the actual actions people such as those in ZESA must engage in. Evidence drawn from the study show that the sharing of tacit knowledge leads to the success of the organisation . Availability of relevant knowledge when it is needed results in quick decision making . Evidence from literature show that ZESA has remained more competitive compared to the recently licensed IPPS as it has been in the line of business for a commendable time

Objective 2 : Strategies used to capture and store tacit knowledge in the industry

A number of tools have been identified which are used in utility industries for capturing tacit knowledge and these include measures such as, after action reviews, elicitation interviews, newsletters, decision support system , communities of practice, rewards and recognition. Communities of practice are also useful and these refer to a network of highly motivated and dedicated individuals with a common interest , beliefs and understandings of a particular

topic that interact regularly for the purpose of sharing knowledge and fostering learning activities.

Objective 3 : To assess the organizational factors that foster tacit knowledge management

The research findings showed that there is a strong association between tacit knowledge sharing and recognition and rewards. Trust was also identified as a key contributory factor in the sharing of tacit knowledge and reciprocating the efforts of those who shared their knowledge was also necessary . There is need for the cultural antecedence in the organisation to communicate to the strategic effort of capturing tacit knowledge .

Objective 4: To establish the relationship between culture and tacit knowledge management

The creation, use and sharing of tacit knowledge is dependent on the culture obtained within the organisation. The values held in any organisation influence the success of the strategies for capturing the tacit knowledge. Reward systems signal what behaviour and outcomes are most valued by management . Rewards can therefore sent a signal of management commitment to knowledge sharing. Management can therefore send mixed signals through their reward system. Other cultural factors include the need for mutual trust, common language, relationship network , hierarchy, rewards and power as some of the factors which influence tacit knowledge sharing. Common language implies that the terms or words used should be understood by those who share knowledge .

5.3 Recommendations

The purpose of these recommendations is to solve the problems identified at the beginning by this research as contained in the statement of the problem. The main challenge was the loss of tacit knowledge with the exit of engineers and artisans who possess specialised knowledge and skills leaving behind inexperienced and green cadres who lack the necessary exposure and technical depth. With that in mind the following recommendations have been made:-

- ❖ The apprenticeship training programme must continue but it needs to be grounded in the organisation's culture and operating systems for it to remain relevant and useful to the organisations.
- ❖ The workplace induction processes and acculturation through the process of socialisation must be strengthened by populating them with experienced, knowledgeable cadres who are also committed to a holistic programme of human development.
- ❖ Mentoring and coaching are necessary and these must be strengthened through making a large part of them formal.
- ❖ Organisations need to value and cherish tacit knowledge by focusing on three key areas namely the knowledge management system, being a learning organisation and lastly by adopting improvement and innovation measures.
- ❖ In order to succeed, the organisations must recognise through their knowledge management programme the three sets of aspects which are people, knowledge and the process.
- ❖ Knowledge management strategy must be adopted to ensure a future which is predictable and guaranteed of success, in which there are definite measures and allocation of resources and responsibilities for managing tacit knowledge.
- ❖ Knowledge management culture must be inculcated within the organisation as part of its strategy; the purpose of the culture is to create an atmosphere which fosters creation, use and sharing of tacit knowledge.
- ❖ Knowledge continuity management , this is necessary to foster a systematic way of sharing and capturing the tacit knowledge so that even if engineers and artisans do leave the organisation, the tacit knowledge needed to advance organisational goals with the use of tacit knowledge do not suffer.

- ❖ Organisations need to consider tacit knowledge as one of the key strategic resources possessed by the company which can confer to the organisation a renewable and sustainable advantage for the organisation.

5.4 Implications of this research

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

5.5 Suggested area for further research

During the course of the research it was discovered that a number of gaps do exist in this field as it has not yet been quite researched on particularly in the African context. Whilst literature is awash with empirical results from the first world none or little research have been carried out in third world countries to determine how the indigenous communities with their indigenous knowledge systems would have handled the capturing, storing and transmission of useful technical tacit knowledge.

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APPENDICES : Research Instruments

APPENDIX 1: Questionnaire for all respondents

Dear Sir/Madam

You are kindly requested to participate in a research project titled “*The influence of tacit knowledge in the capturing and management of tacit knowledge in the energy sector*” The research is a requirement for the researcher to complete her studies towards the attainment of the Master of Commerce in Strategic Management and Corporate Governance. The aim of this questionnaire is to collate data that will be used in determining whether culture influences capturing of tacit knowledge in organisations .Through your participation, it is the researcher’s desire to fully appreciate the various challenges that culture poses in as far as capturing of tacit knowledge is concerned . Also, your participation can also assist to identify the opportunities for improvement in this area especially as it affects retention of key knowledge in this sector. The questionnaire has been designed not to take more than 30 minutes of your time. Your input will greatly contribute in achieving the objectives of this research. Your participation in this research is voluntary and you should not write your name anywhere in this questionnaire. Your responses will be treated with strict confidentiality and data from this research will be used purely for academic purposes only. Mark with an (✓) to indicate your responses.

Questionnaire Guide

Tacit knowledge refers to the knowledge that is unwritten, hidden, unspoken knowledge held by an individual and gained through practical experience and insight , emotions and intuition. It is the ”know how” that is intimately connected to the way we solve problems , which is difficult to articulate and mainly based on experience. Tacit knowledge capturing includes identifying,acquiring , refining and storing knowledge for dissemination to practitioners or researchers

General Information

You are required to put a TICK ✓ on your choice which correctly fits information details applicable to you.

1. Which section of the energy sector do you belong to ?

Power Generation

Power Distribution

2. What is your highest qualification level?

Doctorate

Master’s Degree

- Degree
- Higher National Diploma
- Diploma
- National Certificate

3. How many years have you been with the organization?

- Less than 1 year
- Between 1 year and 5 years
- Between 6 years to 10 years
- Between 10 years and 20 years
- Above 20 years

4. Kindly indicate your sex

- Female
- Male

Culture and Leadership of knowledge

The following questions measure your perception about tacit knowledge sharing in your organisation. You are required to put a TICK ✓ on your choice which correctly fits the extent to which you evaluate the organisation in which you work . The scale rating for the questions is as follows:

Strongly agree (5), Agree (4), Neutral (3), Disagree (2), strongly disagree (1)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5.As an individual ,you share knowledge so that:					
a.You get recognition					
b. You are rewarded					
c. You satisfy self –fulfillment needs					
d. You support management strategic objectives					
e. You enhance your career					
6.How much do you agree that your core workers in the organization share tacit knowledge due to the following reasons :					
a. Trust that exist in the organisation					
b. The likelihood that colleagues will do likewise					
c. It is highly valued by management					
d. The organizational culture facilitates a learning environment					

e. People who share knowledge are regarded as experts					
f. It contributes to positive performance appraisals					
7.How much do you agree that people in the organisation do not readily share knowledge due to the following reasons					
a. You are afraid your career would be in danger if you make mistakes					
b. Not enough trust exists in the organisation					
c. Others do not want to share their knowledge					
8.How much do you agree that sharing tacit knowledge contributes to :					
a. The success of the organisation					
b. Competitiveness of the organisation					
c. Innovativeness of the organisation					

Implemented tacit knowledge capturing strategies

The following questions measure your perception about the strategies for tacit knowledge capturing in your organisation. You are required to put a TICK \sqrt on your choice which correctly fits the extent to which you evaluate the organisation in which you work. The scale rating for the questions is as follows:

Strongly agree (5), Agree (4), Neutral (3), Disagree (2), strongly disagree (1)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
9.How much do you agree that the following programs, procedures or systems are being utilized for capturing tacit knowledge					
a. After Action reviews					
b. Operational Routine Procedures					
c. Exit Interviews					
d. Decision Support System					
e. Newsletters					
f. Emails					
g. SharePoint					
h. Communities of practice					
i. Rewards					
j. Stories					
k. Recognition					
l. Apprenticeship					
m. Post- Graduate Traineeship					
n. Turbine Operators Training					
10.How much do you agree that the organisation engages in the following activities in order to ensure value in the traineeship programs (Apprenticeship, Post Graduate Traineeship and Turbine Operator Training)					
a. Engagement of Educational Institutions/External training providers					
b. Defined policy guideline for the					

program					
c. Limitation on the number of trainees at a time in the organisation					
d. Providing the trainees with a mentor and limiting the number of trainees assigned to one supervisor					
e. Providing a platform for regular meetings between trainee and supervisor					

Kindly add any other information that you think might be relevant

THANK YOU FOR YOUR PARTICIPATION

Appendix 2: Interview Guide for Managers , Engineers , Artisans and Turbine Operators

Interview Guide

You are kindly requested to participate in this research entitled “ *The influence of culture on the capturing and management of tacit knowledge in the energy sector.*” The research is a requirement for the researcher to complete her studies towards the attainment of the Master of Commerce in Strategic Management and Corporate Governance. The aim of this interview is to collate data that will be used in determining whether culture influences capturing of tacit knowledge in organisations .Through your participation, it is the researcher’s desire to fully appreciate the various challenges that culture poses in as far as capturing of tacit knowledge is concerned . Also, your participation can also assist to identify the opportunities for improvement in this area especially as it affects retention of key knowledge in this sector. The interview has been designed not to take more than 40 minutes of your time. Your input will greatly contribute in achieving the objectives of this research.Your participation in this research is voluntary. Your responses will be treated with strict confidentiality and data from this research will be used purely for academic purposes only.

Interview Guide

Tacit knowledge refers to the knowledge that is unwritten, hidden, unspoken knowledge held by an individual and gained through practical experience and insight , emotions and intuition. It is the ”know how” that is intimately connected to the way we solve problems , which is difficult to articulate and mainly based on experience. Tacit knowledge capturing includes identifying,acquiring , refining and storing knowledge for dissemination to practitioners or researchers

Culture and Leadership of tacit knowledge

1. How is tacit knowledge sharing valued?
2. How is knowledge sharing a component of performance evaluations?
3. How are rewards, incentives, or benefits considered in knowledge sharing ?
4. How is knowledge hoarding a component of the work environment ?
5. What barriers exist between the departments to prevent knowledge transfer and knowledge sharing?
6. How these barriers could be overcome?

Implemented tacit knowledge capturing strategies

7. What strategies are implemented for the on-boarding benefit (i.e training tools) and off-boarding benefit (i.e capture retiree knowledge)?
8. How are formal or informal groups used to share knowledge?
9. How are stories used to share positive or negative experiences, if so , do you have an example of a story that was shared ?

10. What are the other strategies which are used in your organization that could capture tacit knowledge
11. How does your organization participate in industry conferences, conventions or other external events?
12. Would you like to add anything to your responses before we conclude the interview

Appendix 3: Interview Guide for HR and Training Personnel

Interview Guide

You are kindly requested to participate in this research entitled “ *The influence of culture on the capturing and management of tacit knowledge in the energy sector.*” The research is a requirement for the researcher to complete her studies towards the attainment of the Master of Commerce in Strategic Management and Corporate Governance. The aim of this interview is to collate data that will be used in determining whether culture influences capturing of tacit knowledge in organisations .Through your participation, it is the researcher’s desire to fully appreciate the various challenges that culture poses in as far as capturing of tacit knowledge is concerned . Also, your participation can also assist to identify the opportunities for improvement in this area especially as it affects retention of key knowledge in this sector. The interview has been designed not to take more than 40 minutes of your time. Your input will greatly contribute in achieving the objectives of this research.Your participation in this research is voluntary. Your responses will be treated with strict confidentiality and data from this research will be used purely for academic purposes only.

Interview Guide

Tacit knowledge refers to the knowledge that is unwritten, hidden, unspoken knowledge held by an individual and gained through practical experience and insight , emotions and intuition. It is the ”know how” that is intimately connected to the way we solve problems , which is difficult to articulate and mainly based on experience. Tacit knowledge capturing includes identifying,acquiring , refining and storing knowledge for dissemination to practitioners or researchers

Implemented tacit knowledge capturing Strategies

1. What are the incentives or rewards given to employees for sharing their knowledge
2. Does the performance management system in the organisation encompass metrics for tacit knowledge capturing or sharing
3. Does the organisation has a clear policy or set of guidelines to inform the way traineeship or apprenticeship is organized?
4. How does the organisation support employees to participate in industry conferences conventions and external events?
5. Are there any cultural barriers in the organisation that hinder tacit knowledge capturing?
6. What can be done to improve/ mitigate the effects of these barriers
7. Would you like to add anything to your responses before we conclude the interview