

UNIVERSITY OF KWAZULU-NATAL

**KNOWLEDGE MANAGEMENT AND INFORMATION SYSTEMS:
IMPLICATIONS FOR INSTITUTIONS OF HIGHER EDUCATION IN KWAZULU-
NATAL**

by

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DECLARATION

I, **Nokuthula Bavu**, declare that:

- (i) The research reported in this dissertation, except where otherwise indicated, is my original research.
- (ii) This dissertation has not been submitted for any degree or examination at any other university.
- (iii) This dissertation does not contain any other person's data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.
- (iv) This dissertation does not contain any other person's writing, unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:
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- (v) This dissertation does not contain text, graphics or tables copied and pasted from the Internet, unless specifically acknowledged, and the source being detailed in the dissertation and in the biography section.

Signature:

Date:

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ABSTRACT

The approaches of knowledge and information are mostly scattered on different forums conducted by numerous different people with no palpable connection. A cohesive and coherent approach is unlikely to occur, to retain volunteer knowledge, facilitate knowledge sharing and make use of valuable knowledge to improve current and future projects. This study is focused on identifying how information in the form of a project is stored, communicated and how to facilitate the sharing of the necessary knowledge between the project and its volunteers, and among volunteers within a higher education context. Questionnaires were administered among the participants from two selected Higher Education Institutions (HEIs) in order to collect data for this project. The participants were both academics and administrative staff members. However, only 30 respondents participated in the study. The findings revealed that there is limited use of Knowledge Management (KM) that is centred at top management. This suggests a lack of the culture of information sharing which leads to employees being willing to leave their places of employment as they feel they are not rewarded or recognised. It is recommended that HEIs should extend the number of KM tools used and explore modern technologies. Further research areas would include a broad study that would involve a large sample and as many institutions as possible.

Keywords: Knowledge Management, Knowledge sharing, tacit knowledge, Information Systems, ICT.

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENTS	ii
ABSTRACT.....	iii
Table of Contents	iv
List of Tables	vii
List of Figures	viii
List of Acronyms	ix
CHAPTER ONE	1
INTRODUCTION AND OVERVIEW OF THE STUDY	1
1.1 Introduction.....	1
1.2 Background of the Study	1
1.3 Scope of the Study	3
1.4 Problem Statement	3
1.5 Research Objectives.....	3
1.6 Research Questions	4
1.7 Significance of the Study	4
1.8 Conceptual Framework.....	4
1.9 LITERATURE Review.....	5
1.10 RESEARCH METHODOLOGY.....	5
1.11 Structure of the Dissertation	6
1.12 Conclusion	7
Chapter TWO.....	8
LITERATURE REVIEW	8
2.1 Introduction.....	8
2.2 Conception of Knowledge Management	9

2.3 Knowledge and Competencies.....	10
2.4 Knowledge Sharing.....	11
2.4.1 Tacit and Explicit knowledge	12
Source: Sohail and Daud (2009).....	15
2.4.2 Information Technology and Communication (ITC).....	15
2.5 Information Management.....	16
2.6 Electronic Learning.....	17
2.7 Implementation Strategies and Processes of Knowledge management.....	22
2.8 Conclusion	22
Chapter THREE.....	24
RESEARCH METHODOLOGY AND DESIGN	24
3.1 Introduction.....	24
3.2 Project Participants	24
3.3 Research Design.....	30
3.4 Research Methodology	32
3.4.1 Quantitative methodology.....	32
3.5 Description and Construction of the Research Instrument	35
3.6 Data Analysis	36
3.7 Limitations of the Study.....	36
3.8 Conclusion	37
Chapter FOUR	38
PRESENTATION OF FINDINGS AND DATA ANALYSIS	38
4.1 Introduction.....	38
4.3 Biographical Information of the Participants.....	39
4.4 Knowledge Management	42
4.5 Information System Collation of Survey	50
4.6 Conclusion	55

Chapter FIVE	55
CONCLUSIONS AND RECOMMENDATIONS	55
5.1 Introduction.....	55
5.2 Overview of Previous Chapters	56
5.3 Summary of the Findings.....	57
5.4 Limitations of the Study.....	59
5.5 Need for Further Research	60
5.6 Conclusion	60
References.....	61
Open University, (2011). Managing Knowledge an essential reader, edited by Stephen and Tim Ray Walton Hall. Milton Keynes.....	63
Appendix 1	65
Section A – Biographical Data	67
Section B - Knowledge Management within the University	67
Section C: Information system collation of surveys	70
Section D: Ethical Clearance.....	72

LIST OF TABLES

Table 2.1: Use of the explicit and tacit knowledge in the organisation

Table 2.2: Characteristics of basic concepts

Table 4.1: Gender of participants

Table 4.2: Job cluster

Table 4.3: Work experience

Table 4.4: Thoughts about KM

Table 4.5: KM status in the Institution

Table 4.6: Challenges related to Knowledge Retention

Table 4.7: Views about KM policies

Table 4.8: Satisfaction level of the strategy the Institution uses for KM

Table 4.9: Cultural barrier about Knowledge Management

Table 4.10: Challenges in implementing KM at Institutions

Table 4.11: The best description of KM in the Institution

Table 4.12: Technologies implemented at Institutions

Table 4.13: Role of the institution in effectively achieving the best result in KM

Table 4.14: Factors which influence Knowledge Retention in Institution

Table 4.15: Existing policies and procedures of Knowledge Management and Information System in Institution

LIST OF FIGURES

- Figure 2.1: Learning Organisation Framework
- Figure 2.2: E-learning Value Chain
- Figure 2.3: Classical Meeting
- Figure 2.4: Human Resources Information Systems
- Figure 2.5: KM Implementation Model for KMS
- Figure 3.1: MUT and UKZN Comparison
- Figure 3.2: UKZN Organogram

LIST OF ACRONYMS

The list of essential terms and their abbreviated form is provided below.

CHE.....	Council on Higher Education
CI	Competitive Intelligence
HEI	Higher Education Institution
HEI.....	Higher Education Institution
HEQC	Higher Education Qualification Council
HR&D	Human Resources and Development
ICT	Information Computer and Technology
IS	Information Systems
IT	Information Technology
KM	Knowledge Management
KMS	Knowledge Management Systems
MUT.....	Mangosuthu University of Technology
NQF	National Qualification Framework
PhD	Doctor of Philosophy
UKZN	University of KwaZulu-Natal

ANNEXURES

ANNEXURE A: Letter of Informed Consent

ANNEXURE B: Permission from Mangosuthu University of Technology

ANNEXURE C: Permission from University of KwaZulu-Natal

ANNEXURE D: Language Editor's Report

CHAPTER ONE

INTRODUCTION AND OVERVIEW OF THE STUDY

1.1 INTRODUCTION

Knowledge Management (KM) is vast in private organisations such as accounting and Information Systems (IS) used for innovation purposes as the competition is rife. Yet this is not the case in other sectors such as higher education. This study seeks to address the implications of Knowledge Management and Information Systems for the purpose of contributing to effectiveness in the universities. The smaller scale of contribution to the universities focuses on the internal knowledge sharing, creation and the support of these processes with open source lightweight tools within the university.

The project relies heavily on the knowledge of the volunteers. Other projects may have some mechanisms through which they communicate and share knowledge such as an Information Systems. The destruction of volunteers has a potentially significant impact in a university due to the fact that the massive loss of volunteer knowledge can be tremendously difficult to replace.

New employees usually require some experience through training within the university. Forfeiting existing knowledge can cause the acquiring of knowledge to be more problematic. It is essential that such knowledge is retained in the university preferably explicitly in an electronic format, to allow new employees to access, share and contribute to the knowledge base.

1.2 BACKGROUND OF THE STUDY

Globalisation and knowledge management systems have an effect on all organisations. It is fundamental that all managers, especially in Human Resources divisions align their organisations with Information Systems. Various organisations such as non-profit organisations, public and private are losing vast amounts of information from their workforce.

Both private and public organisations are affected by globalisation and changing technology (Hutton, 2007). Knowledge is described as an analytical practice of judgement and solving challenges or situations (Alvesson, 2004). People who perform this type of work are referred to as knowledge workers. Knowledge is advanced in China. The Chinese take knowledge as an important source or aspect towards their innovation, and enhancement of their technologies for future advancement of their economic growth (Mugnus, 2011). India is taking a lead by progressing faster than China in entrepreneurship and technologies which has resulted in a divisive strategy to manage the knowledge workers. Knowledge Management has become their core function in many organisations (Pusher and Ronen, 2011).

Various Knowledge Management strategies have been implemented, more in larger organisations than in small organisations. It has never been implemented in higher education institutions (HEIs) since Knowledge Management has not yet been considered as a useful tool to use for their innovation. Companies such as accountancy firms, management and marketing agencies put a lot of value in Knowledge Management (Alvesson, 2004). They associate Knowledge Management with innovation, which in their analysis prohibits adequate outcome to their business. The process that supports the formation of new knowledge is knowledge sharing (Markin, 2009).

A well-organised institution is constituted by its sound knowledge and information management system, human capital, operational capital as well as customer service strategy. Studies have shown that inadequacy in any of the aforementioned constituents functionally disables an organisation. In order to enhance operational strategies at the university, the study proposes the initiation of effective knowledge and information management systems that will shape the university transformation strategy.

The skills and knowledge management study discuss the following aspects:

Intellectual property: which describes something of value to the institution but has no physical form.

Human capital: referred by Gary Becker as “the stock of knowledge, habits, social and personality attributes, including creativity, embodied in the ability to perform labour so as to produce economic value”.

Operational capital: Operational capital connects processes and practices within the institution. It is the most critical asset in any business and enables the organisation to remain functional, (Open University,2009:222)

1.3 SCOPE OF THE STUDY

The scope of the study is limited to looking at the implications and impact of knowledge management and information systems policies and activities on universities. There has been no major organisational activity to promote Knowledge Management. University of KwaZulu-Natal and Mangosuthu of University of Technology have employed intellectuals who hold Masters and Doctoral degrees, such environments have an immense knowledge at their disposal which at present is not disseminated properly.

1.4 PROBLEM STATEMENT

Higher education institutions provide an educational environment where students are equipped with skills and competencies. However, the operational and decision-making processes of Higher education institutions are affected by inadequate Knowledge Management strategies and processes. In order to improve and optimise the knowledge management processes within a university, there is a need to investigate the implications of knowledge management in a university context.

1.5 RESEARCH OBJECTIVES

Within the context of the identified problem, the following objectives are set to be addressed by this study:

- To identify the extent to which Knowledge Management can be utilised to the benefit of higher education institutions to improve their performance;
- To analyse insight on the implications of Knowledge Management and information systems on higher education institution performance; and
- To determine the required tools that can contribute to the increased participation of knowledge workers in the development of their data bases in higher education institutions.

1.6 RESEARCH QUESTIONS

This study attempts to answer the following questions:

- To what extent can Knowledge Management benefit higher education institutions in their performance?
- What are the implications of Knowledge Management and information systems on the performance in higher education institutions?
- What are the required tools needed to increase participation of knowledge workers in the development of higher education institutions?

1.7 SIGNIFICANCE OF THE STUDY

The unique contribution of this study is its inclusion of Knowledge Management in the developmental phase of higher education institutions. It is noted that a lot of previous studies have focused on the role of Knowledge Management and Information Systems in the business sector. This suggests a gap in the educational context that this study addresses.

1.8 CONCEPTUAL FRAMEWORK

Projected Framework: The framework projected for this particular study consists of defining the current gap in the knowledge management needs of the institution and recommends a constructive process for eliminating the gap. The focal point is to identify the strategic needs of the higher educational institutions on the basis of their goals and objectives, institutional hierarchical structures, supporting divisions and their processes. When this has been accomplished it is vital for the institution to determine the level of its existing knowledge management to analyse how much of the useful knowledge is efficiently apprehended and re-use it in the required manner. This is followed by acknowledging the deficiencies which cause that particular gap. The main aim is to introduce strategies that can efficiently close that gap for the institution to achieve its goals and objectives. The primary knowledge sources in higher educational institutions are the faculty, students, section heads, staff, administration, registrar and the Human Resources department which offers training and replacement services. These divisions generate tacit and explicit knowledge in the areas of academics, development and

planning as a result of the activities performed. This knowledge is apprehended and summarised to be stored as a central institutional resource for the use of stakeholders (Ranjan, 2011).

1.9 LITERATURE REVIEW

The fast-growing wealth of information in the world is forcing all organizations to be technologically abreast especially in the higher education of institutions. It has been realized that most institutions have been more theoretical than technological hence knowledge is the most important tool for every organization. In this study the knowledge management will be dealt with in depth because the institutions of learning are where the secondary knowledge is acquired in preparation to contribute to the economic world. Most institutions still find it difficult to be in tune with knowledge management. Knowledge can be retrieved from the supply of knowledge sharing by employees disseminated to the students, all that is needed is for the employees of the higher learning institutions to be exposed to opportunities which can equip them to share their ideas and creativity as to how to better the institution in knowledge. The growing number of internet connectivity is compelling the employees in institutions to be more abreast than its supplier of knowledge.

The question one can ask is where this knowledge comes from, and why now? The history of knowledge management is from the 1990s where practitioners and scholars realized that capital and labor-based industries were deteriorating whilst knowledge-based organizations were growing and becoming more profitable. This is due to the fact that knowledge is the main source of competitive advantage for the success of an organization.

1.10 RESEARCH METHODOLOGY

The research methodology of this study can be described as quantitative. This is because the primary data that forms the core of the study was gathered through the use of questionnaires administered among university academic and administration staff members from two HEI. The secondary data was in the form of literature review. This involved the reading of books, journal articles and search engines. Detailed information on methodology is provided in chapter three.

Quantitative research is often an iterative process whereby evidence is evaluated, theories and hypothesis refined and technical advances are made, (Welman, Kruger and Mitchell, 2009)

1.10.1 Questionnaires

Questionnaires are compiled in the form of a paper, most of the time, and data collection is achieved by means of writing on the paper. In this study the questionnaires were hand delivered and collected. They were sent to a selected number of people. The advantage of questionnaires is that it creates a positive response where people try to be truthful when responding because of the anonymity of the correspondence. The disadvantage of questionnaires, especially in the higher learning institutions is that people receive the questionnaires but do not return them on time, so it is very time consuming. The reason for this drawback is that the employees in higher education are very hectic, spending much time on their personal research (Leedy and Ormrod, 2001).

1.10.2 Ethical Considerations

Ethical clearance for this study has been applied and approved by both the Mangosuthu University of Technology and the University of KwaZulu-Natal (attachment in Annexure B and C). The purpose of obtaining ethical clearance is that South Africa is undergoing its transformation into a non-racial, non-sexist, democratic state in which human dignity; equality and the advancement of human rights are protected, promoted and respected under the South African Constitution of the Republic of South Africa of 1996. Particularly section 12(2) of the Bill of Rights which provides that, “everyone has the bodily and psychological integrity, which includes the right to security in and control over their body; and not to be subjected to medical or scientific experiments without their informed consent”.

1.11 STRUCTURE OF THE DISSERTATION

The study is structured into five chapters as follows:

Chapter 1 outlines the introduction and overview to the research, its purpose and the objectives. Research themes and paradigms are also identified.

Chapter 2 presents the literature overview of the study. This includes reviewing research that has previously been explored on the same subject of knowledge sharing and knowledge management.

Chapter 3 gives the framework of research design and the methodology used to conduct this study.

Chapter 4 entails data presentation and analysis obtained from using the research methodology.

Chapter 5 provides the summary of the findings, the conclusion and the recommendations of the study.

1.12 CONCLUSION

This initial chapter has served as an introduction and provision of background information on the study. The study has been described as centred on the issues of Knowledge Management within higher education institutions as a means of improving efficiency. The abbreviated terms that are used throughout the report are provided in an effort to assist the reader. There is a problem statement which serves to indicate the issues that were of concern to the researcher when deciding to embark on the study. The three research objectives and the related research questions were duly listed. This was followed by a discussion of the significance of the study. The next chapter will discuss the literature review used for the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The issue of Knowledge Management has been around for ages. The challenging part is that most organisations embrace it as a theoretical process and not a practical process. Various institutions are aware that knowledge management is a vital tool for their organisation. However, many organisations find it difficult to develop their institutional thinking from an information focus to a knowledge concentration. In this context, Knowledge Management is distinguished as information that is used to link, equate, evaluate and implement information. It is regarded as the implementation of experience and judgment of certain individuals within higher education institutions. The exploratory question is: what is the best way to motivate faculty and administrators in higher education to share the knowledge they have? What would be gained from experience in order to best perform? Does the instructional culture encourage and reward employees for sharing their ideas and wisdom? (Rachelle, 2004).

Job security and promotion of faculty members relies on developing original ideas, and executing them in an exclusive way. In this case knowledge can be classified as a belief that can be validated and assumed. In an uncondusive environment, a lot of information can be accumulated but lost in the fear that research can be stolen. Technology has advanced in such a way that research ideas can be shared and captured and reproduced unethically. This occurs when an individual's job security is dependent on the demonstration of their knowledge and skills. Furthermore, it happens when there is no incentive for those with knowledge insights to disseminate with those who are battling with knowledge. A reward structure in colleges and universities has to be looked at whereby those who share their knowledge will advance via promotion and job security (Rachelle, 2004).

Universities traditionally have two critical roles, collection and analysis. The roles are to create knowledge and circulate it. This is done by means of research engine collection and analysis and teaching where knowledge is disseminated. There is a rapid change in the economic environment where the traditional role of the universities as the givers of knowledge is

extremely diversified. This is where Knowledge Management comes into play, where it creates an innovative relationship and integrates it with work and education. This helps students to closely match their talent with the workplace requirements, contributing and adapting new knowledge with the existing one. This enables knowledge to be substantiated (Malik, 2005).

2.2 CONCEPTION OF KNOWLEDGE MANAGEMENT

In knowledge management language can be described as the mental facility which enables people to absorb and use compound communication systems. Language is used in formulating and communicating ideas, storing knowledge by means of signs, gestures, sound, images and objects. Though language does not define our proficiencies adequately, it can structure them. Shared knowledge originates from the sender and it benefits the receiver. Knowledge can be retrieved from the supply of knowledge shared by all employees in the workplace given that there is an opportunity to share their ideas and creativity. Such process occurs when an organisation believes in its workers and provides a platform for learning and thought processes to occur (Davenport and Prusak, 2000).

There is evidence of such knowledge development systems in developing countries such as India. Their economic growth was declining or stagnant and a turnaround was achievable through knowledge development. The principle of refraining from strategies of imitation was adopted and new knowledge was created in these developing countries. New knowledge was used as an improvement and innovation tool (Levis, 2009). Given the emergence of technological changes, human resource professionals are to familiarise themselves with the Knowledge Management process. Many organisations accentuated the use of computer specialists to transform organisation processes and support technology-based systems. This was in order to manage Knowledge Management assets such as databases and the intranet. It is expected that the younger generation will change and do away with prioritising personal contact association. There are technology servers which facilitate and enable online communication. The elderly employees believe in face-to-face contact and in meetings (Mankin, 2009).

Baran (2006) asserts that there are three vital concepts that should be considered in a study on Knowledge Management within a university context. The three concepts are: educator's

professional development, knowledge management, and information of technology users' practices. Globally a launch setting for users' practice has to be a vital focus within an educator's professional development projects. It has been seen as an operative resolution to provide continuous learning opportunities for educators. It can provide both implicit and explicit knowledge sharing prospects amongst educators. Educators can also acquire an opportunity to establish useful documentation, implementation procedures and share ideas with other innovative educators (Baran, 2006).

Information can be collected from the knowledge users as vital component for the organisation's resources. Institutions should be able to organise and take advantage of their own operations concerning information gathering, processing and dissemination. This will enable the institution to inform each stakeholder of its organisational goals. The creation of an information system that can fulfil the organisational information's needs should be considered as it supports competitive intelligence. The system needs to be updated with organisational activities. These activities should stimulate better results and aid the organisation to choose the best strategies and innovative processes (Trigo, 2007). To define Competitive Intelligence (CI) as a systematic process of information gathering, processing, analysis and decomposition. The process is piloted within the background of the external environment of the organisation's activities. The major objective is to provide accurate information, effectively and timely. Information has to be accurately constructed and implemented by the right person for the best possible decision to be taken. The efficacy of such information decomposition is determined by meeting the vital requirements. Institutions that are able to put into practice a CI system in their organisation should acquire a more closed and responsive community, which is informative and has a strong sense of skills settings for the enhancement of success (Trigo, 2007).

2.3 KNOWLEDGE AND COMPETENCIES

For the identification of the core elements of the accumulated knowledge and competences, a process of identifying which knowledge and competences are used daily to attain goals in the institutions is required. After the identification process is the application of factual knowledge, methodologies, experience, communication competences, social competence, and leadership of competence, personal contacts and networks. Self-introspection is also required in the

process. Another method is to gather a certain group or number of people, for instance 20 people, who do not know each other, where questions such as, 'Which person in the room has the next birthday?' can be posed to the group. Individuals may not be comfortable to respond to the question confidently. Why is that? It is because an individual only knows his or her own birthday but not anyone else's, which means it is individual knowledge. In order to acquire information about a person, an organised data collection process is advocated. An organised data collection process enables each person to write down his or her date of birth on a sheet of paper, and this information can be arranged chronologically. After the data collection, the data can be regarded as information knowledge. When information is isolated it is not the same as knowledge because that information itself cannot be used to predict consequences or interdependencies. When it is known knowledge even in the near future it can still be visible to the new employees (Nonaka, 1991).

2.4 KNOWLEDGE SHARING

The other challenge is that knowledge sharing transpires informally, especially if people are sharing during their leisure times or when they are relaxed. Managers are not even aware of such informal gatherings, which results in knowledge sharing not being acknowledged by the organization due to their busy schedules towards executing the organizational objectives. Top managers are not aware of such gatherings or do not take such informal knowledge sharing activities seriously and as something that yield positive results. Their perception is that there is no innovation which can come about when people are not in a serious mode. This causes the loss of the information which had been shared, as sometimes it gets heard by someone who might not use it or who is not in the right portfolio to use it, and then it goes to waste (Oye and Salleh, 2011).

This kind of knowledge has two kinds of influencers, those who are positive and those who are negative. The organisation has to be actively involved in motivating individuals to participate in the sharing of information. It has to be the culture of the company and monitored in a way that it is made official. The success of information sharing is critical to both entities. There are also factors to be considered to be the contributors of knowledge sharing, these are; age, culture and the industry. An industry in which their core function is technology is to be more

observant in increasing the level of value in knowledge sharing, and also accountability. The reason is because these fields are in demand in terms of the changing trends.

Most organisations have developed a culture where they gather information through informal webs and networking where complex problems are solved, after being those resolutions that is when the actual operation of business begins. When two employees share interpersonal trust, knowledge formation and sharing is enabled through a person's competency and generosity. Conceptually trust is a mysterious concept which is challenging for management to corroborate. Initiation for the purpose of identifying ways of interpersonal trust in a knowledge sharing context should be attested. Managers are to promote behaviours such as, discretion, reliability, partnership and practices which build vision, ensuring transparency in decision making, and holding people accountable for trust within the organisation (Abrams, 2003)

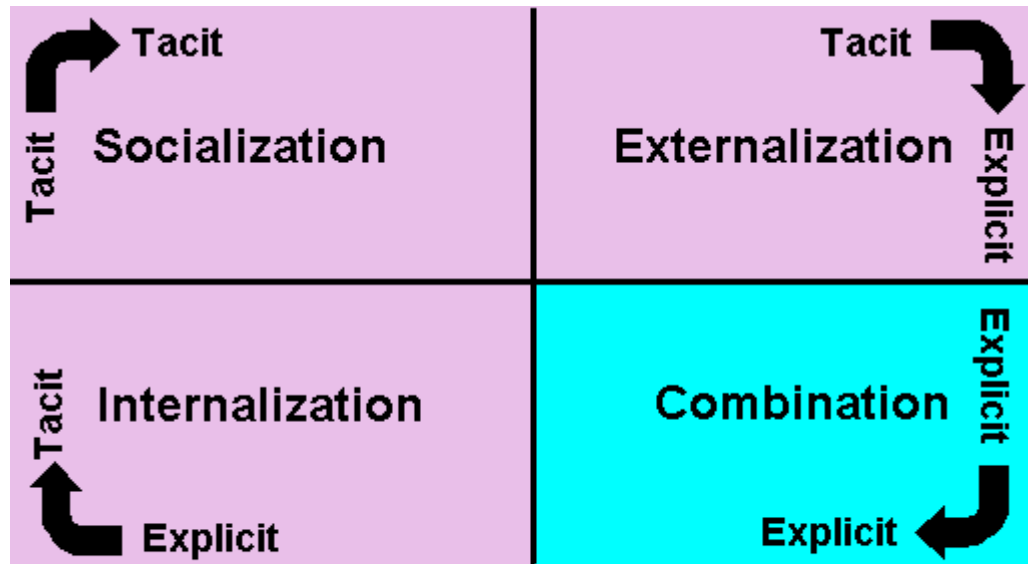
2.4.1 TACIT AND EXPLICIT KNOWLEDGE

The full latency of an individual brain is not adequately utilised by the organisation. Therefore the Knowledge Management purpose is to assist the company to retain all information it has for itself (William, 2007). Explicit knowledge is comprised of the formation of words, text, documentation, company data, and computer programmes. Tacit knowledge is that knowledge which is very difficult to verbalise. Knowledge in this form requires an organisation to extract and compile in order to make it available (King and Lekse, 2006). Individuals are unique in terms of applying tacit and explicit information, where different outlooks pertain. In most cases it is shared in groups as it is believed that it gives more constructive knowledge in an effective manner (Smith, 2001).

Attracting and maintaining a talented, loyal and productive workforce is obtained through implementing opportunities to use tacit knowledge. Management should openly value knowledge resources, such as gathering, sorting, transforming, recording and sharing of knowledge. This should be accepted and supported at all costs by the institution otherwise priceless knowledge will endlessly be lost (Smith, 2000). Management should be aware that relatively unchallenged, creative people are eager to apply their knowledge. Tacit knowledge in particular is normally lost due to outsourcing, downsizing, merging and termination of

employment. It is estimated that almost ninety percent of knowledge in most organisations is entrenched and produced in people's minds (Wah, 2000).

Figure 2.1: Learning Organisation Framework



Learning Organization Framework

Source: Nonaka (1991).

Many researchers have shown interest in Knowledge Management ever since its implementation. The conversion of knowledge process was introduced by Nonaka (1991) and it became popular. Nonaka identifies and focuses on major knowledge conversions and it has been categorised into four main dimensions. The four main dimensions became known as Socialisation, Externalisation, Combination, and Internalisation as shown in figure 2.1 (Nonaka, 1991). The framework distinguishes between tacit and explicit knowledge, exploring how they are converted and the roles of technology and people.

Tacit Knowledge

This is the conceptual knowledge entrenched in our minds over a period of time. Some sort of wisdom that associations experience and their explicit knowledge. It includes insights, perceptions, intuition and other components.

Explicit Knowledge

This kind of knowledge can be embedded on paper and in databases.

Internalisation - explicit to tacit

This is the practical learning such as sharing models and technical hands-on into know-how - an action surrounded in the use of business recreation.

Socialisation - tacit to tacit

This involves sharing experience with other knowledge workers. Whereby a team actively provides learning, tutoring and management approaches.

Externalisation - tacit to explicit

This transforms tacit knowledge into explicit knowledge. It is a dialogue which process includes other people, it is an activity which provides team learning, tutoring and management approaches. (Nonaka,1991)

Combination - explicit to explicit

This entails directing and merging explicit knowledge for the purpose of assimilating it and updating the existing document. This involves directing and combining explicit knowledge to integrate it with and update existing document plans. Tacit knowledge appears in three of the four dimensions; it is not astonishing that individuals are the role partakers in three dimensions (the purple areas). Alternatively, the combinational transformation of explicit knowledge on the blue block is the only part where technology dominates (Nonaka, 1991).

The educational context evaluates knowledge-sharing, as a social interface philosophy that requires best practices and sustainability. It is predominantly associated with activities of substituting existing practices with knowledge. It also contributes towards research and teaching experiences and provides additional skills among academics for succeeding in educational competitiveness. Knowledge-sharing includes dissemination, feedback and absorption between individuals (Davenport and Prusak, 2000).

The aim of higher education institutions is to contribute towards their academics in stimulating a new set of ideas by encouraging them to work together. The facilitation of the exchange of knowledge enhances institutional learning competency and ability of its faculty members. This is particularly important in achieving institutional goals (Dyer and Nobeoka, 2000). Higher

education institutions should ensure that their employees are not only unlimited in generating new knowledge, but should simultaneously share their current knowledge with others. For the knowledge sharing significance, a long term institutional success, increase of competitiveness and responsiveness in attaining greater university standards and excellence, is to be achieved and maintained (Howell and Annansingh, 2002). It is without a doubt that sharing knowledge is now recognised as a main and vital component of knowledge management. This requires all academics to have the will to exchange and disseminate knowledge. This means that all the institutions should ensure that knowledge becomes available and made known to academics. When educators and researchers have mastered the importance of sharing their knowledge, it will further intensify to improve academic and research excellence. Knowledge sharing is part of knowledge management; higher education institutions should be willing to transfer their practices to improve the quality of knowledge for their competitiveness (Sohail and Daud, 2009).

Table 2.1: Use of the explicit and tacit knowledge in the organisation

Explicit knowledge - hypothetical knowledge	Tacit Knowledge - inner practical, engagement-oriented knowledge
Work process - structured activities, sequence expectable movement, arranged	Work practice - instinctive, individual expertise, offhand
Learning – on-job learning	Learn - facilitation, business prudence
Teach - facilitator uses prescribed curriculum	Teach - mentoring, drilled
Share knowledge - extract from tutor	Share knowledge - contact action
Compensation - entwined to business objective	Compensation - recognition

Source: Sohail and Daud (2009)

2.4.2 INFORMATION TECHNOLOGY AND COMMUNICATION (ITC)

Higher education institutions are the environments which mostly have employees who are experts in all sorts of knowledge in their respective fields. Their expertise and experience contribute towards producing and preserving knowledge. The transformation of higher education institutions has enabled institutions to store, manage and use existing information and knowledge bases in an improved way. This is done for the benefit of accomplishing new

accountability, effectiveness and efficiency requirements. The institutions of higher learning have to internalise a strategic applications of Information management by proposing a basic structure for their IT-services to provide support systems for Knowledge Management.

Information Communication and Technology has become a core function of many aspects of life in this day and age. It has a huge influence towards the dissemination of information and knowledge globally. Information and knowledge has developed and evolved to have a new importance level as a resource (Sedziuviene and Vveinhardt, 2009). Technology and cybernetic communications between people and organisations has become a normal daily lifestyle. Presently individuals work together in collecting, analysing, combining and disseminating information throughout the work process (Sonnenwald Pierce, 2000). What it means is that in the organisation every individual should interact with others in order to cultivate mutual benefit for the growth of the institution.

2.5 INFORMATION MANAGEMENT

From an information management perspective the differentiation of data, information and knowledge is fundamental. Data are the codified observances, it basically means that the quantity of available data is only limited to the number of data sources or sources of observances, which is data on the current and potential future students. Information can be defined as data relevant for a particular system, for example a person or the organisation. Instinctively some data are not as important while others are for the specific research results or recent publications, which make a substantial difference.

Data depends on filtering criteria pertaining to a subject, sometimes it does not matter whether it is relevant or not. For the data to become information it needs to be contextualised to a certain range. Knowledge alone is not enough as it needs to be integrated into the context of experience and the existing knowledge, and this is termed learning (Wilke, 2004). Application systems are perceived as automated task managers for business methods. Information systems are differentiated and constructed on the basis of their purpose and use. One particular purpose might be to offer a software framework for administrative tasks such as the registration of students as well as management duties for decision support.

Table 2.2: Characteristics of basic concepts

	Data	Information	Knowledge
Basic Operation	Codified observant	Systemically relevant data	Integration of information into context of experience
Restriction	Numbers, language/text, images	Information that is relative to the system	Common practice, 'community of Practice'

Source: Willke (2004).

The illustration in figure one suggests that electronic systems should support administration and disposition, and they should indicate which tasks at the HEI should be supported. This support should be with electronic data processing and also to determine which raw data should be collected. Decisions from the support systems indicate that the process in the existing reporting system, raw data gathering and processing strategy. Also, it should indicate in what format it is presented to management for decision making. For example, data from each and every student's application is normally entered as raw data (Willke, 2004).

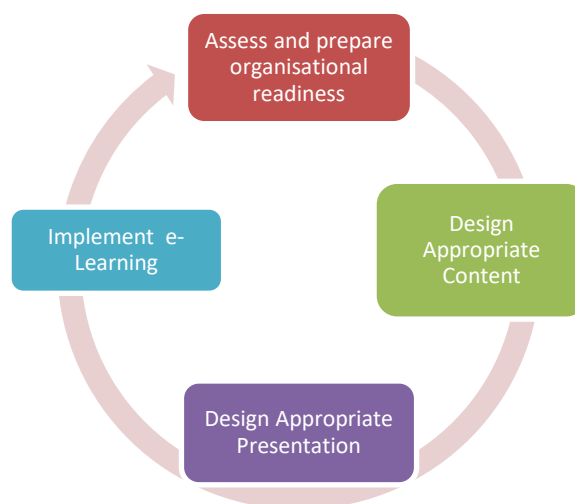
Demographics emerge only when various reports have gathered the data together, even if there are more students (Willke, 2004). Software stands in terms of operating systems, databases and application software tools. This, when linked in the information system, becomes communication between a specific application and the horizontal integration of data processes. These consequences result in multiple points of data acquisition, which is redundancy in data inventory. This data inventory leads to contradictory information; where in recent project designs delivered IT solutions for higher education. Specifically, like alumni management, personal development, student support, and institution's management.

2.6 ELECTRONIC LEARNING

The scheme of classical learning processes and styles have changed drastically through current technology. E-Learning is defined by many different definitions where each comprises of

conceptions, attitudes and training viewpoints of its presenters. There is one obvious use of IT in the institution of higher learning which is to enable knowledge management through e-learning, the creation and distribution of knowledge through online delivery of information, communication, education and training (Wild, 2002). These are used when there is not a teacher but through an institution, a selection of proper solutions to apply technologies, organising multimedia and IT provides educational self-assessment and independent learning facilities. There are many benefits for learning offered by IT. The method of learning styles and approaches has changed (Abdillah, 2012). IT creates a paperless environment by influencing a global document format which is PDF. The ease of access to resources and the provision of a central area for the students to find information has been a major benefit of e-learning (Concannon, 2005).

Figure 2.2: E-learning Value Chain

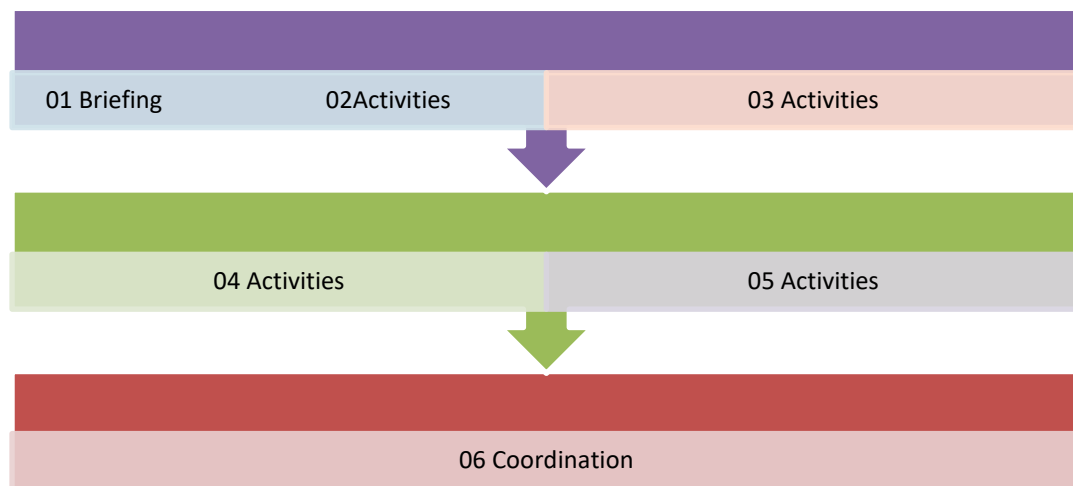


Source: Concannon (2005)

2.6.1 Blog

Weblog (blog) is the customary platform for emerging multi-tier enterprise applications based on the Java programming language. It is media formed and used for disseminating knowledge through the internet. Initially, it was designed as personal web, with the biography of the blogger. It has evolved as the most popular icon in internet applications these days. The biographer uses WordPress to process words.

Figure 2.3: Classical Meeting



Source: WordPress

2.6.2 Documentation

A lecturer has activities which are very important to be displayed as evidence not only for them but also for the institution. These activities are to be organised and stored in a format such as hanging files and kept in the cabinet for referral purposes.

Figure 2.4: Human resources information systems

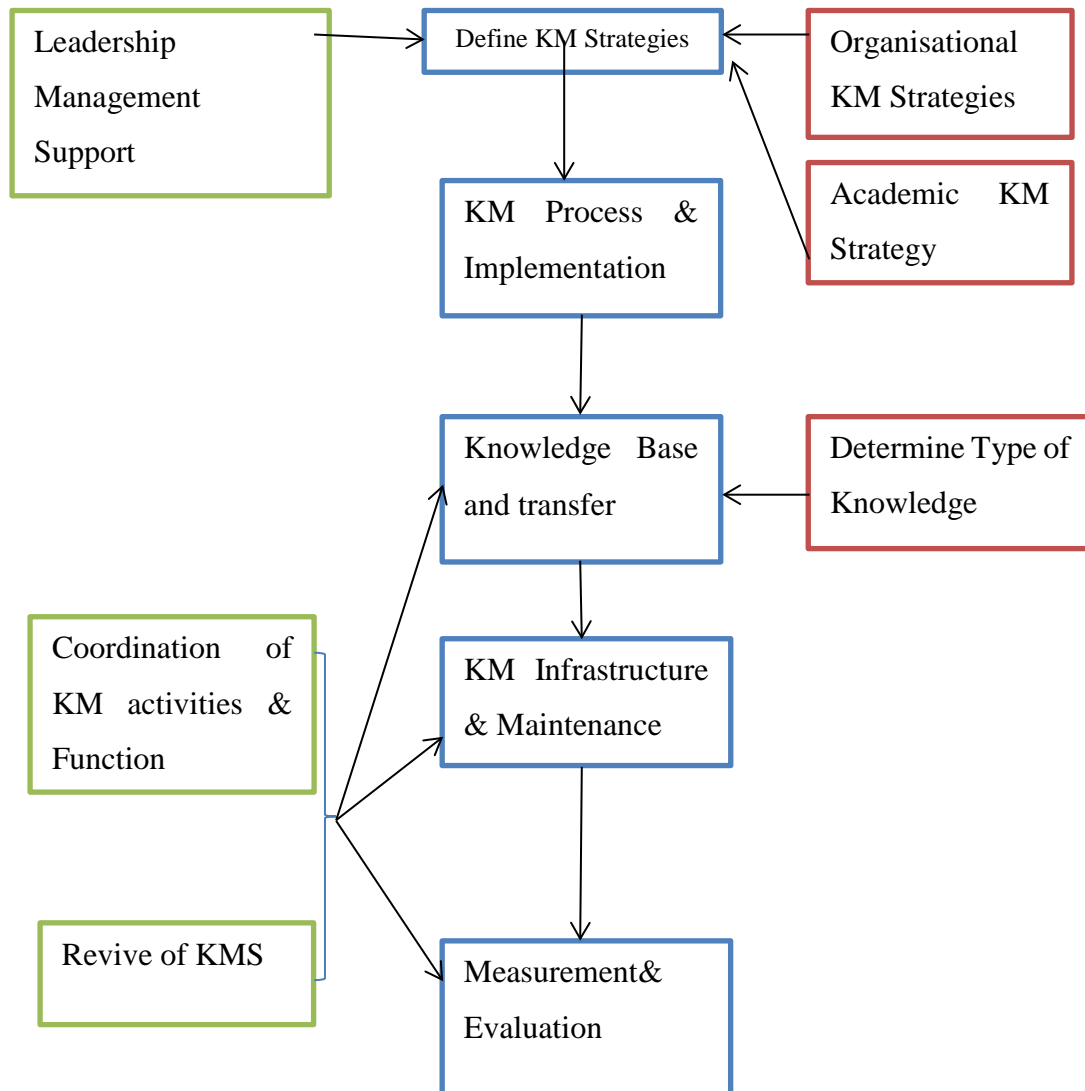


Source: www.gettyimages.com

2.6.3 Electronic Mail (E-mail)

Currently emails have become the preferred mode of communication rather than face-to-face contact. Email is an essential form of media to disseminate information among people within the organisation. It is now considered as a primary medium for information exchange (Laclavik , 2007).

Figure 2.5: Knowledge Management Implementation Model for KMS



Source: Author's Creation (2017)

2.7 IMPLEMENTATION STRATEGIES AND PROCESSES OF KNOWLEDGE MANAGEMENT

Each university has a teaching and learning division which can be enhanced by using Knowledge Management and this can elevate the institution to easily share knowledge among its members when Knowledge Management is used. Secondly, as the institutions become stronger in the area of research they have to have strategies and processes in place to make it easy for their intellectuals to get information (McCathy, 2006). Core project teams should be formed and aimed to be the centre for KMS for each community. An initial evaluation of the knowledge proposals, reviews for verification, structures for classifying, formalising, maintenance and communication for knowledge transfer and sharing. For each institution specifically Knowledge Management activities should be designed for acquiring and sharing knowledge. All these categories are clearly defined in the implementation model in figure 2.5.

The success of this implementation should be linked to the economic performance or institutional value. These should be performance of the institutional bonds to rating, recruiting and financially stability. The model presents measurement indices that the ICT project team builds for each institution. Higher Education Institutions have developed to face the reality of the pressure which is similar to the private sector. The challenge experienced is increasing due to the structural change in the higher education sector. Management has to devise a strategy of adopting new models in search of excellence in order to deal with this ordeal. The institution should reasonably propose management techniques such as Knowledge Management and related strategies to intensify quality and performance. It has been proven in some private sectors that Knowledge Management helps an entity to make the collective information and experience available to individual workers.

2.8 CONCLUSION

Knowledge and all its definitions were vastly explained and discussed in this chapter. In the sub-topics discussions of knowledge management in terms of people, processes and technology and the benefits of Knowledge Management, and what Knowledge Management is all about and what it aspires to accomplish was noted. A brief discussion of the higher education institutions sector followed by explaining that they are similar in perception but differ from

each other in terms of using knowledge within their institutions. The reason for that is that they work towards the common goal though they are not profit orientated. This is because they are the centre of knowledge where most profit organisations are dependent on the institutions to produce intellectuals for their businesses, where the public also benefits. Knowledge sharing has been defined, followed by a more in-depth discussion of it in an institution, and the learning organisation framework was introduced.

The chapter further discussed technology, electronic learning in the context of electronic documentation, blogs and electronic mail. This was done in order to show how they are aligned with and supported by Knowledge Management and Knowledge Systems in the institution. The emergence of strategic application of information management at higher education institutions and user participation has been discussed. How ICT can support Knowledge Management in higher education institutions has been discussed in detail, as most institutions have been working on their transformation. Also, a lengthy discussion of how the Knowledge Management can be facilitated particularly in being articulated. Barriers and challenges to implement and use the technological tool have been also identified. What is important is the imperative of the institutions to have a goal that, while using electronic and social media, it has to be utilised more effectively. It is also imperative that the institutions know what tools can best address their strategic objectives and achieve their goals. Institutions should toil to achieve their goals in many areas from marketing to volunteer recruitment and retention to knowledge sharing within the organisation. Individual goals can be addressed by means of different electronic and social media and this is important for the organisation to ascertain. The next chapter will deal with research methodology and design.

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

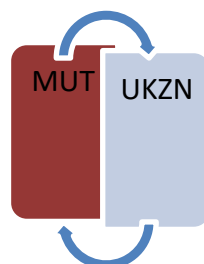
3.1 INTRODUCTION

The key to a research project is its methodology. This is so because if the methodology is not appropriate for the set objectives, the whole project can be a failure. In this regard, there are two basic approaches to consider when conducting research. These are the quantitative and the qualitative approach. The researcher can either choose one of the two or a combination of both. Linked to the research approach are the participants who provide data to be used in understanding the subject of the investigation. This chapter commences with a discussion on project participants. The context of the study is higher education institutions and as such this is the focus area of the discussion. Furthermore, there is a discussion on the type of research methodology that was commissioned during this research. The issue of what each survey question attempted to address by means of a questionnaire is also discussed. How the results of the acquisition and citation and how they informed the experiment and helped to approach and address knowledge sharing issues in higher education institutions are discussed.

3.2 PROJECT PARTICIPANTS

The study examined two higher education institutions namely, the Mangosuthu University of Technology (MUT) and the University of KwaZulu-Natal (UKZN) out of a possible 26 in South Africa, as illustrated below:

Figure 3.1: MUT and UKZN Comparison



The selected project participants represent a variety of the higher education institutions type of employees. These are both academic and administrative employees who include IT specialists within their institutions. The selection of these participants was done because they are considered to be ideally suited to be part of this project. While twelve participants from both institutions were anticipated to be surveyed during the acquisition process, it was also understood that this would depend on their availability and willingness. This would be immaterial of their area of study specialisation and level of qualification as the subject of the study applies to all.

3.2.1 Project Partner Commonalities

Though both institutions MUT and UKZN do not hold the same quantity of employees and programmes offered in terms of faculties, different as they may, there are a lot of commonalities. These commonalities include the following: The intake of students is local students and international students. The employees are local employees and international employees. Both institutions prepare students for the purpose of fulfilment of economic sector and scarce skills.

Both institution's MUT and UKZN aim is to produce students who will be competent enough in the technological science to become employers instead of being only employable candidates. The core function of the respective institutions is mainly offered by the participants who include a large percentage in teaching and learning. The knowledge acquired by these participants during their interaction with students' needs is to be shared among the other employees within the institutions. The exchange and the nature of knowledge is crucial to be shared rapidly and effectively thereby ensuring a stable knowledge base for both institutions. This is for use by the current participants who are the current workforce. Mistakes, obstacles and all other challenges observed by the participants as problematic are highlighted for the use of the institution.

3.2.2 Project Partner Profile

South Africa has 26 institutions of higher learning. However, only two form the context of this research project due to their proximity, and the fact that this is a mini-dissertation that needed to be completed within a short space of time. These two institutions of higher learning are the Mangosuthu University of Technology (MUT) and the University of KwaZulu-Natal (UKZN),

which are both located within the Province of KwaZulu-Natal (KZN) around the city of Durban. Of interest about KZN is that it is viewed as the second highest populated province in the country. KwaZulu-Natal contributes 21 per cent of the population in the South African country, also 20 per cent towards South Africa's gross domestic product. This reflection points out that KZN plays a socially and economically dynamic role in South Africa.

3.2.3 MUT Mission and Vision

Mangosuthu University of Technology was established in 1979, making it 38 years old in 2017. It is situated in the Umlazi Township on the south coast of Durban. Mangosuthu University of Technology is inspired by the 'In Pursuit of Excellence' motto. Its foundational faculty was engineering where it started with 35 engineering students, even though at present it accommodates as many as 1000 engineering students. Whilst Mangosuthu University of Technology is small in size and in the nature of its qualifications that are mainly diplomas with no postgraduate qualifications, until 2017 when it had its first Master's course-work qualification in environmental studies, it has managed to produce some of the prominent executive human capitals in huge companies. People like Mr Sizwe Nxasane, a former Telkom CEO and many more are alumni of Mangosuthu University of Technology. (MUT, 2017)

Mangosuthu University of Technology's main previous target was to attract students from previously disadvantaged communities. However, in recent years it has managed to attract a few international applicants as well as multi-racial students. Mangosuthu University of Technology has been catering for students who mainly do not hold a bachelor's degree pass rate from grade 12 because of its status as a Technikon and now a University of Technology. Its main belief is the trust in its dedicated academics that possess a good quality of skills. Mangosuthu University of Technology's goal and faith is that eventually a student will be as competent in the workplace as those who completed their studies in traditional universities. However, due to the pressure of globalisation and change in the world Mangosuthu University of Technology has hardened its requirements of applicants, which does not mean that those disadvantaged students are abandoned. Mangosuthu University of Technology has partnered with the Technical and Vocational Education and Training colleges where if the student has improved his or her grade 12 results and has passed basic courses in the qualification of their choice, that student can be accepted and offered credits to continue with their studies and graduate with a diploma. Mangosuthu University of Technology recently developed its

technological transformation, where it has progressed drastically and speedily in its applications and registration processes, whereby it is fully utilising Central Applications Office (CAO) process of registrations. There are no longer ‘walk-in’ applicants which shows how much Mangosuthu University of Technology has adopted technology and also how committed they are to accomplishing the same standard as traditional universities such as the University of Cape Town (UCT) and UKZN that have long done away with long queues during registration periods. (MUT, 2017)

3.2.4 UKZN Vision and Mission

In the province of KwaZulu-Natal and nationally, University of KwaZulu-Natal has been maintaining its excellence in research and innovation. Its vision is that “the university aspires to be a positively transformed institution based on a clear understanding of its goals for broad and comprehensive change underpinned by shared values. University of KwaZulu-Natal has been promoting independent research, intellectual discourse and public debates in a spirit of responsibility and accountability. It firmly supports the principles of academic freedom and institutional autonomy. University of KwaZulu-Natal is huge with five campuses in the province formed in 2004 after the merger between the old University of Natal, Durban and Pietermaritzburg campuses with the University of Durban-Westville. The campuses that form the merged University of KwaZulu-Natal are:

Pietermaritzburg Campus: This was the main location of the University of Natal and its predecessor.

The Howard College Campus: The Howard College campus’ location was the Durban location of the University of Natal until the 2004 merger.

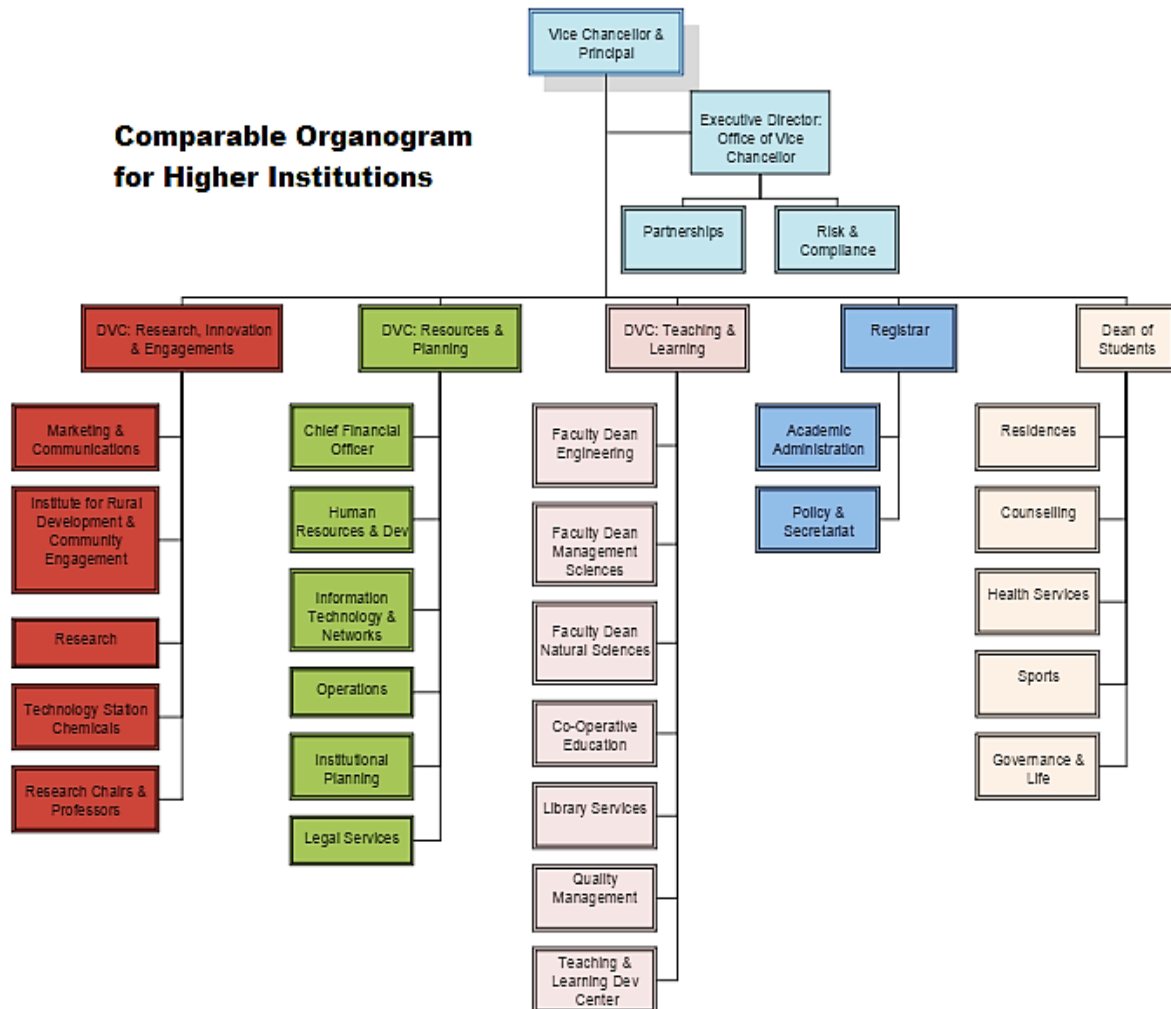
Westville Campus: Westville campus is in an environmental conservancy in Westville about 20km West of Durban. It was formerly the site of the University of Durban-Westville before the 2004 merger.

Nelson Mandela Medical School Campus: The Nelson Mandela Medical School campus, established in 1950, was originally a racially segregated part of the university legally allowed to provide education to black people under apartheid.

Edgewood Campus: Edgewood campus is located in Pinetown, east of Durban. The buildings originally formed the Edgewood College of Education, which was incorporated into the University of Natal in 2001.

University of KwaZulu-Natal is currently ranked fourth out of the 26 universities in South Africa by the Times Higher Education World University Rankings. Looking at all the campuses which offer a full range of qualifications it is clear that the quality of intellectuals is of an international standard (UKZN, 2017).

Figure 3.2: UKZN Organogram



UKZN (2017)

The organogram in figure 7 is commonly standardised in the institutions in South Africa as they are all under the supervision and guidance of the Higher Education Qualification Council (HEQC) and the Council on Higher Education (CHE). All the positions and aspects of this organogram have been found to have similar functions depending on the size of each university.

A table below will give an overview of each priority:

Council:

- Administers the university
- Articulates rules and statutes
- Employs senior and executive management
- Establishes committees of Council
- Executive Management

The responsibilities of the council is to manage and administer the Vice Chancellor and Principal's daily activities including the below functions:

- Search of funds and development
- Asset acquisition and management
- Student affairs, language centre and libraries
- Academic faculties and co-operative education
- Technology stations in chemical programmes
- Research and development as well as the management systems
- Quality management and Human Resources development
- Information Technology and Networks
- Maintenance, postal services, occupational and safety as well as printing

Registrar

The registrar is responsible for compiling academic plans such as planning term dates, registrations, and allocation of lecture venues.

Faculty Boards

They play a critical role in the management of academic programmes. Responsible for making recommendations to the Senate on numerous academic issues such as admission requirements, appointment of examiners, amendments to existing curriculum and development of new programmes.

Heads of Departments

The functions of the HOD's is to formulate enrolment requirements and ensure that they are met. Set a standard of quality and ensure effective learning as well as assessments. Work hand-

in-hand with the Registrar ensuring that the timetable is in align with the Registrar's plan and also that lecture facilities are available all the time as speculated. Act as a representative of their department in the designated statutory committees. Design and develop new programmes and make sure that quality management directorate review them to meet the standards of HEQC and CHE.

3.3 RESEARCH DESIGN

A virtual study was employed for the purpose of making comparisons across the diagonal cultures and practices within the two institutions that form the context of this project. Comparative study has a challenge that the institutions might have the same categories used in the data which is required for comparisons. One challenge faced in this particular study is that in some instances, for example research output, MUT had, on the one hand, used percentages when, on the other hand, University of KwaZulu-Natal has used whole numbers in terms of research output. The challenges were addressed as follows:

Impartiality: the comparison was unbiased, open minded and independent.

Exactitude: The research was conducted quantitatively with the purpose of unequivocal description of the data collection and analysis procedure, through measurement and statistics using questionnaires. In addition a detailed explanation was provided in an attempt to explain relationships among sensational variables.

3.3.1 Nature of the Research

The focussed nature of this study is on the perceptions of the respondents based on their personal experiences in their academic life. This study is exploratory, explanatory and descriptive in nature. The exploratory research aims to develop the respondents on the little knowledge understood. This study can construct ideas for further research and lead to the identification of other meanings in categories of such a study (Marshall and Rossman, 1999: 33). The focal point is seeking, providing and evaluating the inspiration that two or more singularities have on each other, describing the vital relationship that is meaningful. Research design is the researcher's probe that collects patterns of interpretation (Denzin and Lincoln, 2000).

The purpose of a research design is to provide, within an applicable approach of inquiry wherein the most valid and precise possible responses are found for the research question. A defined purpose in which there is consistency between the research questions and the methods or approaches proposed that generates data that is credible and verifiable indicate that the research design has been effective (McMillan and Schumacher, 2001). This kind of research inspires the process of strategic thinking and reflection from the onset and remains throughout the whole research process which is consistently reviewed.

3.3.2 Rationality, Dependability

The results will be valid and reliable through arguments drawn from the literature on the selected topic, in comparison with what other universities at large are doing.

Validity: refers to the advancement to which any measurement approach or instrument succeeds in outlining or quantifying what it is projected to measure (Weiner, 2007). It is how well a scientific test or piece of research actually measures what it sets out to measure, or how well it reflects the reality it claims to represent. Similarly, validity in this logic is a concept drawn from the positivist scientific tradition and needs specific interpretation and usage in the context of qualitative research. The concept of validity is described by an extensive collection of terms in qualitative studies. This concept is not a single, fixed or universal concept, but “rather a contingent construct, inescapably grounded in the process and intentions of particular research methodology and projects (Winter, 2000).

Reliability: is the extent to which measurement techniques are depended upon to safeguard consistent results upon repeated application (Weiner, 2007).

Initially the researcher’s intention was to get information from other employees in both universities, with the hope that as a fellow employee in an institution the researcher would not experience resistance. However, there was a huge resistance. It is caused by the fact that people have a fear of victimisation, especially since the topic deals with the issues which are extremely lacking in the environment of education. It should be a topic in which all universities are supposed to be knowledgeable about and comfortable about sharing their experiences and perceptions.

The researcher’s intention was to benchmark the two universities and the problem is why only two were chosen. This was done for the purpose of getting authentic information as it was not

practical to compare three or four. The study of this kind of topic is meant to involve human information with the technological information for the purpose of cross checking information. Due to the practical challenges the researcher encountered it was decided to use World Wide Web Information in the form of audit reports released for the public by University of KwaZulu-Natal and Mangosuthu University of Technology. Mangosuthu University of Technology staff members responded very well in the sharing of information, but this was not the case from University of KwaZulu-Natal where the researcher encountered a lot of resistance. The general response was that the targeted participants were not used to the topic. As a result, the decision was made by the researcher to rely on the use of systems information from internal sources.

The analysis of the collected data took the format of being compared and interpreted with the purpose of extracting from these two institutional reports what could be useful for this study. Should there be discrepancies in terms of the information populated by these two institutions, this will be regarded as an opportunity for them to revisit the systems which they are using for the betterment of their institutions' information. That is, verification will be simulated by other institutions (McMillan and Schumacher, 2001). The reliability of the questionnaires that will be developed will be based on the literature that has been consulted by the researcher. The term reliability is a concept used for testing or evaluating quantitative or qualitative research (Nahid, 2003).

3.4 RESEARCH METHODOLOGY

Quantitative research was conducted in the form of a questionnaire. Each question was designed in order to provoke specific pieces of information and to address the research objectives and questions of the study that were set to be carried out. Below, a discussion on quantitative methodology follows. This also looks at the advantages and disadvantages of quantitative methodology. At the same time, there is a discussion on qualitative methodology that is aimed at highlighting why it was not ideal for the current project. The advantages and disadvantages of the qualitative methodology are also presented.

3.4.1 Quantitative methodology

Quantitative research is primarily a replication process whereby evidence is evaluated, theories and hypothesis cultivated and technical developments are made. The purpose of this study in

quantitative research was used to the hypothesis of the sample size against the hypothesis that the researcher has identified in chapter one. It is the type of research that is primarily dependent on the collection of quantitative data that is by means of a questionnaire (Welman, Kruger and Mitchell, 2009: 78).

Questionnaires: were distributed physically, meaning a human being was literally send to the targeted sample and collected them. There was no electronic means of any kind to avoid the escalation to the untargeted sample. The questionnaire that had been developed had a covering letter requesting the participants to state whether they were participating in the research or not and it also declared that this research was only for studying purposes, therefore, it was not going to be published. The questionnaire had general instructions that guided the respondents on how the questionnaire should be filled in (Healy and Perry, 2000: 116-18). For the purpose of this study all the respondents were required to remain anonymous; therefore information such as employee number, identity number, initials and surnames was not required in the demographical section. This was designed to ensure that the respondents felt comfortable enough to provide even the most negative information about their institution without being worried about being associated with it. Lindlof, Bryan and Taylor (2002) clarify that one notable intention for asking demographic questions is to tell who the respondents are in terms of their background rather than their personal details. They further state that demographic data is needed to help explore the findings of research and other surveys (Lindlof, Bryan and Taylor, 2002: 117).

3.4.2 Advantages

Quantitative research design is an outstanding way of finalising results and proving or disproving a hypothesis. The structure has been the same, nothing has changed for centuries, so it is standardised across many scientific fields and disciplines. After the completion of statistical analysis of the results, a comprehensive answer is reached, and the results can be rationally discussed and published. Quantitative experimentations also filter out external factors, if properly designed, and so the results gained can be seen as real and unbiased. Quantitative experiments are useful for testing the results gained by a series of qualitative experiments, leading to a final answer, and a lessening down of possible directions for follow-up research to take.

3.4.3 Disadvantages

Quantitative experimentations can be challenging and costly and require a lot of time to perform. It must be cautiously planned to ensure that there is complete randomisation and correct designation of control groups. Quantitative studies usually require wide-ranging statistical analysis, which can be difficult, due to most scientists not being statisticians. The field of statistical study is a whole scientific discipline and can be difficult for non-mathematicians. Additionally, the requirements for the successful statistical confirmation of results are very inflexible, with very few experiments comprehensively proving a hypothesis; there is usually some ambiguity, which requires retesting and refinement to the design. This means another investment of time and resources must be committed to fine-tune the results. Quantitative research design also tends to generate only verified or unverified results, with there being very little room for grey areas and uncertainty. For the social sciences, education, anthropology and psychology, human nature is a lot more complex than just a simple yes or no response.

3.4.4 Qualitative Methodology

Qualitative research is dependent solely on interviews by means of face-to-face or recorded. This method was used to gather the exact information. The semi-structured format was followed as a form of guidance in terms of gathering the expected responses from the interviewees. In this study the interviews were conducted with two senior level candidates from each institution that is one per institution. The interview questions were developed from the questionnaire, and they were used as a supplementary tool of gathering information. A purposive random sampling method was used to determine the sample, with the hope of achieving specific information where senior leaders were chosen (Lindlof, Bryan and Taylor, 2002).

3.4.5 Advantages

Qualitative design is mostly conducted in a small group and has an ability to get more in depth into human emotions. Data is more complex which gives a closer look as to how and why people think and behave the way they do. Experiences of people become more uncovered and it is less expensive due to the fact that it forms part of small groups, unlike quantitative design which requires large groups and expensive measurement tools. Issues can be studied in a large scale and thoroughly due to a smaller number targeted. This is when the investigator has the

opportunity to guide the discussion in real time rather than be limited to specific questions. The data that is collected comes from test subjects and cannot be generalised to a larger population.

3.4.6 Disadvantages

Qualitative is centred on the inability to interpret results swiftly. The quality of the study can be questionable because of the investigator's close interaction with the small group. There are no assumptions to be made beyond the current group of participants. This is due to the fact that the data collected is very specific to that existing group and also the limitation of the data by the researcher's skill on deciding factor. There can be a deviation of data by the participants being biased in the presence of the investigator.

3.4.7 Structured Interviews

This study used this type of interview for the purpose of acquiring data on the targeted subject which is Knowledge Management. This type of an interview is designed to elicit specific details on a given issue. This is a systematic goal orientated process, where the organised communication between the knowledge engineers is achieved (Meyer, 2008). Other than semi-structured where the objective is to allow the interviewees to use their judgement on a particular matter and to give open-ended questions which results to open-ended responses. The advantage of structured interviews is that the focus is attentive on a given issue, where specific detailed information is gained on an issue discussed, and insight into declaration knowledge used is provided (Jeffrey and Krames, 2003: 16).

Sample size - A sample size was 30 employees from MUT and UKZN was drawn from a population of 80 academic and administrative staff members. In drawing the sample size, the researcher focussed on those staff members who would have an understanding of KM issues from both Universities. In this research the possession of knowledge from the participants was more reliant on the university's website of which neither is updated for such information.

3.5 DESCRIPTION AND CONSTRUCTION OF THE RESEARCH INSTRUMENT

The questionnaire has been developed in MS Office 2010 and it comprises of four pages. It is divided into three sections (A, B and C). There is also a covering letter with a short description, which is not too technical, where the interviewee should easily understand the topic. This covering letter is attached to the questionnaire requesting permission to conduct a survey. The

questionnaire has a unique number where the respondent will answer these questions using a 'follow up' scale as a rating. Section A consists of biographical information which has eight (8) questions, Section B consists of ten (10) questions about knowledge management and Section C comprises of four (4) on information systems.

3.6 DATA ANALYSIS

For the purpose of this study two data analysis methods have been identified and are to be used; that is inferential statistics, which is inference about a population drawn from random samples drawn from it, or more generally about a random process from its observed behaviour during a finite of time; and descriptive statistics, which are used to describe the basic features of the data in the study. They provide simple summaries about the sample and the measures together with sample graphic analysis; which they form the basis of virtually every quantitative analysis data. Various techniques that are commonly used are classified as graphical descriptions in which the research use graphs to summarise data.

3.7 LIMITATIONS OF THE STUDY

The reported study relies on data collected quantitatively. This therefore makes it impossible to gain a deeper understanding of the responses received. In this case, a mixed method that would have also utilised qualitative data collected in the form of interviews would have helped improve the reliability and validity of findings. Whilst such an approach had initially been considered, it was however abandoned in recognition of the fact that there may be barring factors in carrying out such a research approach that would include conducting interviews.

The human instrument is as frail as any other research instrument which is limited just by being human where mistakes are made, prospects are missed, and personal bias affects the results. A public institution is influenced by external environments where they just change legislations, judicial orders, programmes as well as the structure (McMillan and Schumacher, 2001). Respondents have different perceptions; situational origins are to be measured by indicating the anonymity of the research. Respondents might use jargon words to express their vast knowledge in ICT integration which can result in a loss of information. The use of language by respondents who are in possession of diplomas can differ drastically to those who are in

possession of postgraduate qualifications such as Doctor of Philosophy (PhD). Moreover, all respondents, immaterial of their highest qualifications, could respond differently as influenced by their knowledge or lack thereof of the discipline of the study.

3.8 CONCLUSION

The aim of this chapter was to explain how data was collected and analysed. The research design and the target population, including sample size and sampling method, were clearly defined. Statistical tools, which will be used in the study such as frequencies and cross formulation, were also defined. Reliability and validity were dealt with in this chapter. The principal focus of this chapter was on the research methodology used and its advantages and disadvantages.

In the study of these 26 universities most of the functions stipulated above are a little similar as all are governed by one CHE and HEQC. It is therefore imperative that each institution should prioritise knowledge management. One of the South African economic contributions in knowledge to the business world is education. Universities are the centres of knowledge where mostly in terms of the NQF are to meet its requirements. Both universities have contributed a lot to the South African economy during the times when technology was not as advanced as currently. Universities are now faced with the challenge of being abreast with up-to-date information and becoming reflective of the challenges of the community (Bawa, 2012: 13). University of KwaZulu-Natal is at a competitive advantage as it offers limitless Bachelor's degrees as compared to Mangosuthu University of Technology where they only offer a limited range of such degree. This also will assist Mangosuthu University of Technology to stretch a bit to work tirelessly to achieve a quarter of the degrees, which in turn will attract more intellectuals. The next chapter will deal with presentation of findings and data analysis.

CHAPTER FOUR

PRESENTATION OF FINDINGS AND DATA ANALYSIS

4.1 INTRODUCTION

The purpose of this chapter is to present the findings from the process of data collection described in the previous chapter. Data was collected using a survey questionnaire that was administered to employees of two universities in the province of KwaZulu-Natal. In an effort to set the scene, the chapter commences by reminding the reader of the research objectives and the questions the study intends to answer, as initially indicated in chapter 1. The presentation of the results starts with a discussion on the background of the respondents. This is followed by a presentation of the findings on the research objectives and questions. The discussion of the findings also draws from the reviewed literature and previous studies in order to highlight correlations and contradictions. In line with the quantitative nature of the study, graphs and tables are used in order to present the results in a reader-friendly manner.

In an effort to contextualise the discussion that is the subject of this chapter it is essential to revisit the research objectives and questions that form the core of the reported study. The following are the four objectives and the matching four questions the study set out to answer.

4.1.1 Research Objectives

Within the context of the identified problem, the following objectives were set to be addressed by this study:

- To identify the extent to which knowledge management can be utilised to the benefit of Higher Education Institutions to improve their performance;
- To gain insight on the implications of Knowledge Management and information systems on Higher Education Institutions performance; and
- To establish the required tools that can contribute to the increased participation of knowledge workers in the development of their data bases.

4.1.2 Research Questions

This study attempted to answer the following questions:

- To what extent can knowledge management benefit Higher Education Institutions on their performance?
- What are the implications of Knowledge Management and information systems on the performance of Higher Education Institutions?
- What are the required tools needed to increase participation of knowledge workers in the development of their database?

4.3 BIOGRAPHICAL INFORMATION OF THE PARTICIPANTS

Section A of the questionnaire required the respondents to share some biographical information. This sort of information is considered important to obtain so that it can be used as some of the variables that would help contextualise the subsequent responses to the central questions of the survey questionnaire.

Even though the intention was to secure as many participants as possible from the two institutions, however there were only 30 participants. The first question revealed that the majority of the participants were from the home institution (MUT) of the researcher at 78 per cent, with the rest (22 per cent) coming from UKZN. More numbers from MUT can be attributed to the fact that it was easier for the researcher to approach and follow up on participants that she worked with than those from another institution.

The purpose of this data was meant to gather views of staff members from these two Higher Education Institutions and make a comparison to determine the level of convergence and divergence. The importance of more than one institution in the study is highlighted by Oye and Salleh (2011) who assert that knowledge management involves information sharing. If no sharing takes place within people of the same organisation and with those of other organisations information goes to waste. In both cases, this kind of knowledge has two kinds of influencers, those who are positive and those who are negative (Oye and Salleh, 2011). Along this understanding, the study has sought to identify which of the two institutions has members who are either positive or negative.

The next question inquired on the gender of the respondents. Again the results were imbalanced because of the higher number of males (60 per cent) (n=18) than females (40 per cent) (n=12) that responded. As presented in Table 4.1, there were 18 males and 12 females that responded to the questionnaire. As noted earlier, the number of participants and their profile is something beyond the control of the researcher. Particularly in a HEI environment staff members are always busy and often reluctant to participate in research surveys. Hence, these two variables on institutions and gender were then considered inappropriate for comparison purposes and analysis of data.

Table 4.1: Gender of participants

Males	Females
18 (60%)	12 (40%)

Question three required the respondents to indicate the nature of the job they do in their institutions. The respondents were provided a choice between academic and administrative cluster of their job. As indicated table 4.2, there were more academics (73 per cent) than

administrative members (27 per cent) from both participating Higher Education Institutions who participated in the study. The imbalance in the nature of participants was however not surprising considering that the context of the study was academic institutions. It was therefore expected that there would be more academics than administrative staff members.

Table 4.2: Job cluster

Academic	Administration
22 (73%)	8 (27%)

The selection of an academic environment for the study was due to two reasons. The first was that there has been minimal use of KM in higher education institutions as compared to business industries (Alvesson, 2004). The second is that by their nature Higher Education Institutions are expected to create knowledge through research and for teaching purposes. At the same time the created knowledge needs to be circulated by disseminating it to others in the field (Malik, 2005). While the academics would mainly be responsible for the creation part, they however also need support from administrative staff when it comes to the circulation of information. This can be in the form of the use of the available technology to create and make the information accessible to others. Administrative staff would also be responsible for facilitating the attendance of academics to events such as conferences where they would present and share knowledge (Baran, 2006). In both cases between the role of academic and administrative staff KM systems play a critical role. Moreover, if knowledge is not shared it becomes wasted (Oye and Sallah, 2011).

The fourth and last question on the biographical information of the participants was on their work experience in their respective fields. In this instance the years of experience were put into three clusters. The participants had to choose whether they had worked for 1-5 years, 6-10 years or more than 10 years.

Table 4.3: Work experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. (1-5 yrs.)	22	73.3	73.3	73.3
	2. (6-10yrs)	2	6.7	6.7	80.0
	3. (+10 yrs.)	6	20.0	20.0	100.0
	Total	30	100.0	100.0	

Table 4.3 indicates that the majority of respondents had worked for between one and five years. Those that were between six and ten years formed a small percentage of 6,7 per cent. The respondents with the highest number of years' experience constituted only 20 per cent. On the whole, the general good experience of the respondents was taken as positive for the results of the study. Experience meant that the views to be expressed by the participants on the subsequent questions that formed the core of the study were to be taken as valid because they would have been expressing these from what they had experienced. The experience even if it was less or about five years, which was the majority here (73 per cent), was to be considered as well informed.

Section B and C of the questionnaire focused on addressing the three research objectives and three research questions of the study (see 4.2 above). These questions were on Knowledge Management and on Information Systems. The study sought to diagnose the knowledge and attitudes of the participants.

4.4 KNOWLEDGE MANAGEMENT

Questions five to fourteen were on knowledge management. These questions provided several options that ranged between three and four for participants to tick as their preferred answers. Starting with question five, the participants were asked to indicate their thoughts about Knowledge Management. In this case, the participants were provided with three options. The first option acknowledged that some of the participants might not have ever heard of KM. In anticipation of this factor, and to improve participation in the study, Knowledge Management was briefly explained in the introduction of the questionnaire (See Appendix 1). The second option assumed that MUT and UKZN probably working on rolling it out. Lastly, the third

option expected that some participants might distance themselves from Knowledge Management as a management activity.

Table 4.4: Thoughts about Knowledge Management

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	8	26.7	26.7	26.7
2	18	60.0	60.0	86.7
3	4	13.3	13.3	100.0
Total	30	100.0	100.0	

Table 4.4 shows that the largest number of participants (60 per cent) opted for the second option which suggests that both institutions were working on rolling out Knowledge Management. This is considered a positive result for the study going forward as it meant that a high number of participants would be able to provide informative responses to the questionnaire. The responses obtained from the survey would otherwise have been deemed not beneficial in addressing the research objectives of the study.

The second selected option was 27 per cent of those who had never heard of Knowledge Management. If all the responses from the participants were considered, there would be numerous neutral responses which would not be useful to the study. Such a high response would have indicated that very little is known on the subject and the subsequent questions would have likely indicated the same lack of knowledge by the participants. The least number of participants (13 per cent) settled for option three which stated that this was a management activity.

Question six inquired on the status of the Knowledge Management in the participants' institutions. Participants were provided with four options which were: (a) Introduction stage, (b) Not in existence at all, (c) Growth stage and (d) In pilot stage.

Table 4.5: Knowledge Management status in the institution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	12	40.0	40.0	40.0
2	2	6.7	6.7	46.7
3	6	20.0	20.0	66.7
4	10	33.3	33.3	100.0
Total	30	100.0	100.0	

Table 4.5 shows that the majority of participants were able to provide informative answers on the levels of Knowledge Management implementation. As many as 40 per cent of the participants were able to indicate that Knowledge Management was in the introductory stage in their institutions. This high number of knowledgeable participants on the progress of Knowledge Management implementation links well with the high number (60 per cent) of those who had in the previous question indicated that their institutions were working on rolling out Knowledge Management. Twenty per cent of participants indicated that Knowledge Management was in the growth stage while 33 per cent said it was in the pilot stage. The minority of participants indicated that Knowledge Management was not in existence at all in their institutions.

Question seven inquired about whether or not the participants' institutions emphasized the importance of Knowledge Management. There were four options in this respect which were either (a) Yes, (b) No, (c) Partially and (d) Can't say. Responses showed that the two institutions emphasized the importance of Knowledge Management as per the high number of 'Yes' answers indicated by participants (52 per cent). Twenty-six per cent of participants selected 'No' and 16 per cent chose 'Partially' followed by six per cent that were neutral in their choice of 'Can't say'. As a follow-up to this question the participants were asked to explain the reasons for either a 'Yes' or a 'No'. Unfortunately, the majority avoided responding to such questions that required them to think and explain. This links to the concerns raised earlier about academics and staff apathy when it comes to surveys.

Question nine asked the participants what the challenges related to knowledge retention in their universities were. They were provided with four options which were; (a) Lack of knowledge

or information about Knowledge Management, (b) Information overload, (c) Loss of dynamic knowledge due to the employee leaving the institution, and (d) Poor sharing of knowledge in the institution.

Table 4.6: Challenges related to knowledge retention

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	4	13.3	13.3	13.3
2	12	40.0	40.0	53.3
3	2	6.7	6.7	60.0
4	12	40.0	40.0	100.0
Total	30	100.0	100.0	

Table 4.6 displays an equal feeling in the identification of information overload (40 per cent) and poor sharing of knowledge in the institution (40 per cent) as the two main challenges related to knowledge retention at the two universities of the study. Lack of knowledge received 13 per cent of the votes, and loss of dynamic knowledge due to the employee leaving the institution received 6,7 per cent response from the participants. Clearly, the two main concerns are those that both received 40 per cent each.

Question ten required the participants to indicate what they thought about Knowledge Management policies in cases where these existed in their universities. There were four options to choose from. These were written as, (a) It's quite important and relevant, (b) Quite important, relevant and latest, (c) Quite important, relevant but not updated regularly, and (d) Its trivial, lots of formalities and with no use.

Table 4.7: Views about Knowledge Management policies

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	10	33.3	33.3	33.3
2	2	6.7	6.7	40.0
3	6	20.0	20.0	60.0
4	12	40.0	40.0	100.0
Total	30	100.0	100.0	

Table 4.7 shows that the participants had contradictory feelings about the Knowledge Management policies in their institutions. There was no particular view that dominated strongly. This is evident in that, on the one hand, 40 per cent supported the view that the policies were trivial with no use. On the other hand, this was closely followed at 33 per cent by those who supported the view that it is quite important and relevant. The other 20 per cent, while they felt Knowledge Management policies were important; they thought the policies were not regularly updated. In contrast, a small percentage (6.7 per cent) shared the view that suggested that the policies were relevant and latest.

Question eleven asked the participants to mention their overall satisfaction level of the strategy their institution uses for Knowledge Management. In this instance there were four statements the participants had to respond to and then indicate their level of agreement with the statement. The four statements were: (a) Knowledge Management as a business strategy; (b) Transfer of knowledge and best practices; (c) Innovation and knowing creation; and (d) Personal responsibility for knowledge. The ranking levels provided to choose from under each statement were: VS - Very suitable, S - Suitable, M - Medium, NS - Not suitable, IDK - I do not know.

Table 4.8: Satisfaction level of the strategy the institution uses for Knowledge Management

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	4	13.3	13.3	13.3
2	2	6.7	6.7	20.0
3	12	40.0	40.0	60.0
4	12	40.0	40.0	100.0
Total	30	100.0	100.0	

Table 4.8 shows that statement (c) and (d) received the same levels of support. Statement (c) that was on innovation and knowing creation received a 40 per cent response on the medium level. Statement (d) on personal responsibility for knowledge also received a medium ranking at 40 per cent. Statement (a) Knowledge Management as a business strategy was ranked at 13 per cent while statement (b) transfer of knowledge and best practices received a 6.7 per cent ranking level.

Question 12 required the participants to select from the options provided, one of the cultural barriers about knowledge management in their institution. The options were as follows:

- Knowledge sharing not a part of daily activities
- Lack of training about KM
- Lack of reward/recognition about KM
- Any other please specify

Table 4.9: Cultural barriers about knowledge management

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	7	23.3	23.3	26.7
2	2	6.6	6.6	34
3	14	46.7	46.7	77
4	7	23.3	23.3	100.0
Total	30	100.0	100.0	

Table 4.9 results show that the response that received the highest percentage was (c) Lack of reward/recognition about Knowledge Management at 46.7 per cent. This was followed by similar results for (a) Knowledge sharing not a part of daily activities and (d) Any other please specify at 23 per cent respectively. The problem with (d) is that no specific answers came forward.

Questions thirteen asked the participants to choose from the provided options the challenges in implementing Knowledge Management they see in their institution. The options were:

It is not part of the organisational culture

Top management is not knowledgeable either

The institution is not very techno-savvy

The IT division lacks the understanding of Knowledge Management

Table 4.10: Challenges in implementing Knowledge Management at institutions

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	10	33.3	33.3	33.3
2	16	53.3	53.3	86.7
3	2	6.7	6.7	93.3
4	2	6.7	6.7	100.0
Total	30	100.0	100.0	

The findings as presented in table 4.10 show that the majority of participants (53 per cent) thought that (b) Top management is not knowledgeable either. To follow from this group was a 33% response which was of the view that (a) It is not part of the organisational culture. Option (c) and (d) received that same low results at 7%.

Question fourteen asked the participants to choose an option that best describes their institution about Knowledge Management. In this instance the options were listed as:

- It is the job of the academics only
- It is the job of those who possess postgraduate qualifications
- Executives take active interest and continually support it
- (d) If any other please specify

Table 4.11: The best description of KM in the institution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	8	26.7	26.7	26.7
2	8	26.7	26.7	53.3
3	10	33.3	33.3	86.7
4	4	13.3	13.3	100.0
Total	30	100.0	100.0	

Table 4.11 shows that there were mixed feelings on this issue with no particular option receiving the highest support. This is so because 33 per cent selected (c), followed by 27 per cent for both (a) and (b). As few as 13 per cent selected ‘other’ without providing any specifics.

4.5 INFORMATION SYSTEM COLLATION OF SURVEY

The remaining four questions addressed the issues of information system collation survey. These were questions 15 to 18 in which the respondents were provided with statements and some options to choose from.

Question fifteen required the participants to select technologies that were implemented in their institution. The participants were to choose as many as possible. The options provided were as follows:

- Knowledge management software
- Internet
- Intranet
- GroupWise

- E-commerce
- Data management system
- Data warehousing

Table 4.12: Technologies implemented at institutions

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	2	6.3	6.3	6.3
2	20	62.5	62.5	68.8
3	8	25.0	25.0	93.8
4	2	6.3	6.3	100.0
Total	32	100.0	100.0	

Table 4.12 shows that the majority (63 per cent) selected the internet as the dominant form of technology in their institutions. This is indeed true as most activities in the workplace require an internet connection. The intranet followed suit at 25 per cent as it is equally used for university activities among staff members. Knowledge Management software and Groupwise received less selection at 6.3 per cent.

Question sixteen asked how significant the role the respondents' institution can play in effectively achieving the best result in Knowledge Management. The options were as follows:

- Employment development

- Better decision making
- Intellectual property rights management
- Improving quality of work

Table 4.13: Role of the institution in effectively achieving the best result in KM

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	6	20	20	20
2	12	40	40	60
3	4	13.3	13.3	73
4	8	26.6	26.6	100.0
Total	30	100.0	100.0	

Table 4.13 displays a strong support for (b) Better decision making (40 per cent). The second selected option was (d) Improving quality of work (26.6 per cent), closely followed by (a) Employment development (20 per cent). Very few participants (13 per cent) felt that their institutions were achieving the best results on Knowledge Management by effectively conducting intellectual property rights management.

Question seventeen asked the participants to state what they thought were the factors which influence knowledge retention in their institution. In this case they had to choose one factor from the following options:

- Employees leaving for better job offers
- Retirement
- Promotion
- Relocation

Table 4.14: Factors which influence knowledge retention in institution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	20	66.6	66.6	66.6
2	2	6.6	6.6	74
3	6	20.0	20.0	93.8
4	2	6.6	6.6	100.0
Total	30	100.0	100.0	

The results in table 4.14 show a strong support for ‘Employees leaving for better jobs’ at 66.6 per cent. This was followed by 20 per cent on ‘Promotion’. At a similar 6.6 per cent were ‘Retirement’ and ‘Relocation’. The last question was on participants’ thoughts about the existing policies and procedures of knowledge management and information systems in their institution. The options were:

- It’s important and relevant.
- It’s important and relevant but not updated regularly.

It's not treated as important at all.

Not even involved in any policies and procedures

Table 4.15: Existing policies and procedures of knowledge management and information systems in institution

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	4	13.3	13.3	13,3
2	10	33.3	33.3	46.0
3	8	26.6	26.6	73.0
4	8	26.6	26.6	100.0
Total	30	100.0	100.0	

The results as displayed in Table 4.15 do not indicate major differences. There is 33.3 per cent for (b). This is closely followed by similar results at 26.6 per cent for both (c) and (d). Option (a) received a mere 13.3 per cent.

4.6 CONCLUSION

This chapter has provided the results of the survey that was designed to understand the views of a group of respondents from two universities on Knowledge Management. The survey was mainly guided by three objectives and their three related questions. These were, in both cases, centred on the issue of the extent to which Knowledge Management can be utilised to benefit Higher Education Institutions, gain insight on the implications of Knowledge Management on information systems and to establish what the required tools are that can contribute to the increased participation of knowledge workers in the development of their databases. The next chapter provides a discussion on the conclusions made regarding this study and how it managed to address its set objectives and therefore answer the research questions. This is done by summarising the main findings and making recommendations.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapters served to lay the background to this study. This was in the form of first providing the research objectives and questions in the introductory chapter. The second chapter reviewed the relevant literature which served to provide the direction the study would follow. There was then a discussion on the two available research methods that one could consider. The previous chapter has just presented the findings made in the study. This last chapter therefore naturally discusses the summary of the findings and the implications this has on the objectives of the current study and future research. The limitations of the current study are also noted. In starting the chapter a discussion on the previous chapters is first provided in an effort to remind the reader of what has already been discussed before concluding the findings in relation to the literature.

5.2 OVERVIEW OF PREVIOUS CHAPTERS

It is important at this stage to remind the reader of what transpired in the preceding four chapters.

Chapter 1: Introduction and background

The initial chapter was designed to provide the reader with the background information which inspired the study. The discussion covered areas such as the significance of the study, abbreviations used and briefly indicated the research methodology to be adopted in the study.

Chapter 2: Literature review

This chapter dwelt on literature that forms the core of the study. The main subject of the study is Knowledge Management and as a result this area was discussed at length, drawing from available literature and previous related studies.

Chapter 3: Research methodology

The methodology chapter explored the two main research approaches which are quantitative and qualitative research. The main focus was on the quantitative approach as this was the one adopted in the collection of data through the use of a survey questionnaire.

Chapter 4: Findings

The previous chapter presented the results of the study that emerged from the eighteen questions of the survey. The results were presented using tables to allow a good comparison of the participants' responses. The tables were accompanied by short discussions to indicate the nature of the findings.

Chapter 5: Conclusions

This last chapter discusses the findings in the form of a summary with the intention to indicate the implications of the findings on the objectives, research questions and reviewed literature. The shortcomings are pointed out and future research suggested.

5.3 SUMMARY OF THE FINDINGS

The study was guided by its three objectives and related three questions. The three objectives of the study were:

- To identify the extent to which knowledge management can be utilised to the benefit of higher education institutions to improve their performance;
- To gain insight on the implications of Knowledge Management and information systems on higher education institutions' performance; and
- To establish what the required tools are that can contribute to the increased participation of knowledge workers in the development of their databases.

The related questions read as follows:

- To what extent can knowledge management benefit higher education institutions on their performance?
- What are the implications of Knowledge Management and information systems on the performance of higher education institutions?
- What are the required tools needed to increase participation of knowledge workers in the development of their databases?

In line with the above, the research tool adopted in the study aimed to address the set objectives and answer the related questions. In this case, a survey questionnaire was used to collect data through its well thought out questions that were in line with the objectives and questions of the study. Therefore, it is prudent that the following discussion on the summary of findings is guided by the objectives of the study in an effort to show the extent to which the study has been able to achieve what it set out to address, which is to identify the extent to which knowledge management can be utilised to the benefit of higher education institutions to improve their performance.

Objective 1: To identify the extent to which knowledge management can be utilised to the benefit of higher education institutions to improve their performance.

Questions five to eight were designed to address this first objective. The respondents were provided with statements and possible options to choose from. The findings showed that the majority of the participants (60 per cent) agreed that their two institutions that formed the

context of the study were working on rolling out Knowledge Management. This initial positive response led to the next questions on the extent to which the institutions could utilize Knowledge Management to the benefit of the higher education institutions. As many as 40 per cent of respondents indicated that Knowledge Management was at an introductory stage in the two participating institutions. This suggests the need for institutions to speed up the process to its advanced stages. This urgency was also evident in the question of the challenges with Knowledge Management. The equal number of respondents at 40 per cent raised concerns about the poor sharing of knowledge in their institutions. This implies a gap that requires immediate attention in order to meet the needs of the staff members in these two institutions. These responses contradicted the view shared by the 52 per cent of respondents who were of the view that their institutions emphasized Knowledge Management. This shows a disjuncture between what is emphasized and the slow implementation of Knowledge Management.

Therefore, the findings indicated that Knowledge Management can be utilized to support staff in sharing information that would enable them to work efficiently. This finding is in line with the view expressed by Rachele, (2004) who assert the importance of knowledge sharing in higher education institutions as a way to enhance knowledge promotion and job security.

Objective 2: To gain insight on the implications of Knowledge Management and information systems on higher education institutions' performance.

Closely related to the first objective, the second one sought to understand the participants' views on the implications of Knowledge Management and Information Systems on higher education institutions. In this regard, questions ten to thirteen. The findings showed that the participants were not clear on the implications of Knowledge Management in their institutions. There was some divergence on the relevance of policies, with 40 per cent seeing the policies as trivial while another 33 per cent who viewed policies as important. This division was evident on the question regarding the institutional strategies to support Knowledge Management. Both innovation and knowing creation and personal responsibility received 40 per cent, being medium support. Around the same percentage was received on cultural barriers to the implementation of Knowledge Management whereby 46 per cent of respondents identified lack of reward/recognition about Knowledge Management as a barrier to its support.

The results on this objective indicated a lack of certainty on the part of the respondents judging by their contradictory insights. These were shown to be attributed to their unhappiness with the lack of recognition or reward that comes with Knowledge Management. This finding correlates with the caution expressed by King and Lekse (2006) and Smith (2001) who emphasise the importance of making knowledge available to individuals. They further note the uniqueness of individuals which serves to explain the different views expressed as individuals are not always likely to see things the same way.

Objective 3: To establish what the required tools are that can contribute to the increased participation of knowledge workers in the development of their databases.

This objective was addressed by questions fourteen to eighteen of the research tools adopted in this study. The findings showed that the executive of the institutions were viewed as mainly responsible for Knowledge Management by 33 per cent of the respondents. This suggests a lack of stakeholder involvement in the utilisation of this tool. Furthermore, the tools utilised were basic in that the majority identified the internet (63 per cent) and intranet (25 per cent) as commonly used tools. This suggests the need to expand exposure and participation in innovative tools. This lack of involvement and the use of innovative tools served to explain the high number (66 per cent) who identified 'Employees leaving for better jobs' as a concern. In the same vein, Oye and Salleh (2011) note the importance of information sharing at all levels to ensure that information is not wasted. The organisations have to actively motivate individuals to participate in information sharing as part of their culture that should start at the top and to all levels.

5.4 LIMITATIONS OF THE STUDY

The study has been successful in addressing its objectives. There are, however, a few factors that need to be borne in mind that cause the study to have some limitations. The following are some of the identified limitations that need to be considered when reading the findings.

The study only focussed on two higher education institutions in a country with 26 public universities. For this reason, the study cannot be generalised to all South African higher education institutions. The study sample comprised of 30 participants. The questionnaires that

were used in the study were the responses from the 30 participants. The views expressed were considered as applicable to all the staff members of these two institutions. As noted, the sample size could not go beyond the 30 participants in the study as it was beyond the researcher's control. The tool used was made of statements and options provided by the researcher. Respondents were neither interviewed nor did they show willingness to explain their responses even in cases where the question required them to do so. As such, the findings lack depth that would have been brought to the fore had this been done.

5.5 NEED FOR FURTHER RESEARCH

The study cannot be said to have brought the issues under investigation to closure. For this reason, there is still room for further research. The areas to be considered are:

- A comparative study on Universities of Technology and traditional universities;
- An extended sample of the participants; and
- A mixed method approach that combines the quantitative with the qualitative approach, in order to gain a deeper understanding of respondents' views.

5.6 CONCLUSION

The purpose of this last chapter was to conclude the study. This was done by first recapping on all the previous chapters. This was followed by a presentation of research objectives and questions. The summary of findings was then presented in line with the research objectives. There were four limitations of the study that were presented. Lastly, the areas of further research were outlined for future consideration before concluding the chapter.

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APPENDIX 1:

KNOWLEDGE MANAGEMENT AND INFORMATION SYSTEMS SURVEY

INFORMED CONSENT STATEMENT

Introduction

The aim of this survey is to obtain your views on the issue of knowledge management (KM) and information systems within universities. In the case of this study, knowledge management is described as the process of finding, selecting, organising, clarifying, and presenting information. The reason for the need of KM is for the organisation to be continuously more productive in this fast-changing environment by enabling certain individuals to discuss and share their judgement on critical information pertaining to different subjects within their organisation by utilising available information systems.

Information about participants' involvement in the study

The study consists of 18 questions that you are requested to answer as honestly as possible. The data collected is confidential and the researcher will not be able to tell that it is yours personally.

Duration of the study

Your participation requires about 20 minutes in total.

Risks

This study does not entail any medical, physical or emotional risks.

Benefits

This research might be beneficial in the future of your institutions' management of information.

Participation

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty.

Researcher

The researcher is registered with the University of KwaZulu-Natal where she is doing her Masters' Degree. For questions and comments you may contact me, Nokuthula Bavu, on cell number 084 444 5253 or by email at bavnoks@gmail.com

Consent

I have read the above information. I agree to participate in this study.

Participant's signature _____

Thank you for you taking part in this survey.

SECTION A – BIOGRAPHICAL DATA

Institution

MUT	UKZN
-----	------

Gender

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

Cluster: Please tick the cluster under which your department falls.

Academic	Administration
<input type="checkbox"/>	<input type="checkbox"/>

Years of service -----

1-5 years	6-10 years	+ 10 years
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SECTION B - KNOWLEDGE MANAGEMENT WITHIN THE UNIVERSITY

Please put a in an appropriate box wherever required.

What do you think of Knowledge Management (KM)?

- Never heard of it
- My institution is still rolling it, it is in the pipeline
- It is just a management activity
- One of the Institutional strategies

What is the current status of the KM in your Institution?

- Introduction stage
- Not in existence at all
- Growth stage
- In the pilot stage

Does your Institution emphasise knowledge management amongst employees?

Yes b) No c) partially c) can't say

If yes or No how would you wish they should do?

Comment: -----

What are the challenges related to knowledge retention?

- Lack of knowledge or information about KM
- Information overload
- Loss of dynamic knowledge due to the employee leaving the institution
- Poor sharing of knowledge in the institution

If there are any policies of KM what do you think of them?

- It's quite important and relevant
- Quite important, relevant and latest
- Quite important, relevant but not updated regularly
- It's trivial, a lot of formalities and with no use

Which of the following best describe your institution about KM?

- It is the job of the academics only
- It is the job of those who possess postgraduate qualifications

- Executives take active interest and continually support it
- If any other, please specify

 Please mention your overall satisfaction level with the strategy your institution uses for KM.
 Rank the factors given below as VS - Very suitable, S - Suitable, M - Medium, NS - Not suitable, IDK - I do not know.

KM as a business strategy

VS S M NS IDK

Transfer of knowledge and best practices

VS S M NS IDK

Innovation and knowing creation

VS S M NS IDK

Personal responsibility for knowledge.

VS S M NS IDK

Which one of the cultural barriers below hinder knowledge management in your institution?

Knowledge sharing is not a part of daily activities

Lack of training about KM

Lack of reward/recognition about KM

Any other, please specify

 What challenges in implementing KM do you see in your institution?

- It is not part of the organisational culture
- Top management is not knowledgeable either

- The institution is not much of techno-servy
- The IT division lacks the understanding of KM

SECTION C: INFORMATION SYSTEM COLLATION OF SURVEYS

Which technologies are implemented in your institution?

(Tick as much as is available)

- Knowledge management software
- Internet
- Intranet
- GroupWise
- E-commerce
- Data management system
- Data warehousing

How significant is the role your institution effectively plays in achieving the best result in KM?

- Employment development
- Better decision making
- Intellectual property rights management
- Improving quality of work.

What do you think are the factors which influence knowledge retention in your institution?

Choose one factor.

Employees leaving for better job offers

Retirement

Promotion

Relocation

What do you think of the existing policies and procedures of knowledge management and information systems in your institution?

It's important and relevant

It's important and relevant but not updated regularly

It's not treated as important at all

Not even involved in any policies and procedures

Thank you for your help.



20 July 2016

Ms Nokuthula Bavu (213573688)
School of Management, IT & Governance
Westville Campus

Dear Ms Bavu,

Protocol reference number: HSS/0287/016M

Project title: Knowledge Management and Information Systems: Implications at the Institutions of Higher Learning in KwaZulu-Natal

Full Approval – Expedited Application

With regards to your application received on 22 March 2016. The documents submitted have been accepted by the Humanities & Social Sciences Research Ethics Committee and **FULL APPROVAL** for the protocol has been granted.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Dr Shamila Naidoo (Deputy Chair)

/ms

Cc Supervisor: Professor Thokozane Nzimakwe
Cc Academic Leader Research: Professor Brian McArthur
Cc School Administrator: Ms Angela Pearce

Humanities & Social Sciences Research Ethics Committee

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