"KNOWLEDGE MANAGEMENT PRACTICES IN HIGHER EDUCATION INSTITUTIONS: A CASE STUDY OF UNITED STATES INTERNATIONAL UNIVERSITY"

BY

PAULINE BWIRE

A Project Report Submitted to the School of Business in Partial Fulfillment of the Requirement for the Degree of Masters in Business Administration

UNITED STATES INTERNATIONAL UNIVERSITY

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STUDENT'S DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university other than the United States International University for academic credit.

Signed: P. Bwire  Date: 13-04-2005

Pauline Bwire (ID 611812)

This project has been presented for my approval as the appointed supervisor.

Signed: Dr. Gerald W. Chege  Date: 19-04-2005

Dr. Gerald W. Chege

Signed: Dean, School of Business  Date: 22-04-2005

Dean, School of Business

Signed: Deputy Vice Chancellor, Academic Affairs  Date: 23-May-2005

Deputy Vice Chancellor, Academic Affairs
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ABSTRACT

Knowledge Management is a relatively new phenomenon in the developing world. Few organizations have adopted it as a strategy in their business in Kenya. Knowledge management is definitely capturing more attention over time. Most management gurus such as Drucker argue that it is an important economic source just like capital and labor.

The purpose of the study was to establish the Knowledge Management situation at United States International University (USIU). The specific research objectives of the study were to find out:

- How data and information is stored at USIU
- How information is shared among employees at USIU
- The knowledge management practices and initiatives employed at USIU
- If there are any problems experienced when using knowledge management practices that may be identified

The research design that was used was case study. The study employed probability sampling method. The probability sampling method used was proportionate stratified sampling. The strata used were departments. A sample of 132 respondents was drawn from a population of 200 full time employees who included faculty and other staff. Self-administered questionnaires were distributed in person to the randomly selected respondents. The data was analysed using descriptive statistics. Frequencies were used to describe the data.

The importance of the study was to fill the gap that exists in research on how higher education institutions can apply knowledge management to their
advantage. Most of information available is on knowledge management research in the Western World.

The major findings indicate that data and information is stored using various storage media. The results show that some employees take a backup of their data and/information and use different locations and there is no policy for backup of data and/ information. The results further show that there was cross-functional information sharing within the institution. Employees also share information within teams and departments. There was some information they do not share with each other. The main reason given for this was to maintain confidentiality. Findings indicate that both tacit and explicit knowledge was shared among employees. At the time the study was carried out there were some knowledge management technologies used at USIU.

If knowledge management was given some priority it would benefit the university as a whole and enable it to achieve its vision. There is need for the management to sensitize members of staff on knowledge management. It is also important for the university to invest more capital in the existing knowledge management practices.
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DEDICATION

This project is dedicated to my loving sister Berline Teresa Namukoma. You have always been there for me. I pray that you may have happiness all the days of your life. I pray that God will continue to bless you because you are an angel and a star in my eyes.

To my loving mother, Mrs. Willibroda Bwire who is a real gem and whose strength is amazing. You have always been there for me all the days of my life. I admire you a great deal and hope that I will be able to give to others what you have given to me.

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# TABLE OF CONTENTS

STUDENT'S DECLARATION ........................................................................ II
COPYRIGHT ....................................................................................... III
ABSTRACT ........................................................................................ IV
ACKNOWLEDGEMENT ....................................................................... VI
DEDICATION ....................................................................................... VII
LIST OF FIGURES ................................................................................ XI
LIST OF TABLES ................................................................................ XII
LIST OF TABLES ................................................................................ XII

CHAPTER ONE ....................................................................................... 1

1.0 INTRODUCTION ............................................................................. 1
1.1 Background of the Study ............................................................. 1
1.2 Statement of the Problem .......................................................... 4
1.3 General Objective ..................................................................... 5
1.4 Specific Objectives .................................................................... 5
1.5 Justification of Study .................................................................. 5
1.6 Scope of the Study ..................................................................... 6
1.7 Definition of Terms ................................................................... 7
1.8 Chapter Summary ....................................................................... 11

CHAPTER TWO ....................................................................................... 12

2.0 LITERATURE REVIEW ................................................................. 12
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Introduction</td>
<td>12</td>
</tr>
<tr>
<td>2.2 Data and Information Storage</td>
<td>12</td>
</tr>
<tr>
<td>2.3 Information Sharing</td>
<td>15</td>
</tr>
<tr>
<td>2.4 Knowledge Management Practices and Initiatives</td>
<td>18</td>
</tr>
<tr>
<td>2.5 Challenges to implementing Knowledge Management</td>
<td>26</td>
</tr>
<tr>
<td>2.6 Chapter Summary</td>
<td>27</td>
</tr>
<tr>
<td>CHAPTER THREE</td>
<td>28</td>
</tr>
<tr>
<td>3.0 RESEARCH METHODOLOGY</td>
<td>28</td>
</tr>
<tr>
<td>3.1 Introduction</td>
<td>28</td>
</tr>
<tr>
<td>3.2 Research Design</td>
<td>28</td>
</tr>
<tr>
<td>3.3 Population and Sampling Design</td>
<td>29</td>
</tr>
<tr>
<td>3.4 Data Collection Methods</td>
<td>31</td>
</tr>
<tr>
<td>3.5 Research Procedures</td>
<td>32</td>
</tr>
<tr>
<td>3.6 Data Analysis Methods</td>
<td>33</td>
</tr>
<tr>
<td>3.7 Chapter Summary</td>
<td>34</td>
</tr>
<tr>
<td>CHAPTER FOUR</td>
<td>35</td>
</tr>
<tr>
<td>4.0 RESULTS AND FINDINGS</td>
<td>35</td>
</tr>
<tr>
<td>4.1 Introduction</td>
<td>35</td>
</tr>
<tr>
<td>4.2 Data and Information Storage</td>
<td>35</td>
</tr>
<tr>
<td>4.3 Information Sharing</td>
<td>41</td>
</tr>
<tr>
<td>4.5 Knowledge Management Practices and Initiatives</td>
<td>50</td>
</tr>
<tr>
<td>4.6 Problems Experienced Using Knowledge Management Practices</td>
<td>51</td>
</tr>
<tr>
<td>4.7 Chapter Summary</td>
<td>52</td>
</tr>
<tr>
<td>CHAPTER FIVE</td>
<td>53</td>
</tr>
</tbody>
</table>
5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS .......... 53
5.1 Introduction .................................................. 53
5.2 Summary ...................................................... 53
5.3 Discussion .................................................... 54
5.4 Conclusions ................................................... 58
5.5 Recommendations ............................................ 59
REFERENCES ......................................................... 61
APPENDIX II : PROJECT SCHEDULE ................................. 71
APPENDIX III : SAMPLE SIZES FOR DIFFERENT POPULATION SIZES .... 72
APPENDIX IV : LETTER OF INTRODUCTION ....................... 73
APPENDIX V : QUESTIONNAIRE ................................. 74
LIST OF FIGURES

Figure 1: Knowledge Hierarchy ................................................................. 21
Figure 2: The Processing Cycle ............................................................... 21
Figure 3: Knowledge Management Process ........................................... 22
Figure 4: Data and Information Storage ................................................ 35
Figure 5: Data and Information Storage Methods ................................... 36
Figure 6: Data and Information Backup .................................................. 37
Figure 7: Storage Media ........................................................................ 37
Figure 8: Frequency of Data and Information Backup ............................ 39
Figure 9: Central Backup ....................................................................... 40
Figure 10: Share Information with Coworkers ........................................ 41
Figure 11: Work in a Team ..................................................................... 42
Figure 12: Frequency of Sharing Information with Coworkers ................ 44
Figure 13: Methods of Sharing Information ............................................ 45
Figure 14: Source of Information is Own Self ......................................... 47
Figure 15: Source of Information is Own Self at Different Levels ............. 47
Figure 16: Other Sources of Information Other than Own Self ............... 48
Figure 17: Other Sources of Information Other than Own Self at Different Levels ................................................................. 49
Figure 18: Existing Knowledge Management Practices and Initiatives ...... 50
Figure 19: Experience Problems Using Existing Knowledge Management Practices ................................................................. 51
LIST OF TABLES

Table 1: Number of Respondents Selected in Each Department .................. 31
Table 2: Questions That Answer Each Objective (See Questionnaire in Appendix V for the Questions) ................................................................. 32
Table 3: Other Storage Media Used .......................................................... 38
Table 4 ‘Other’ Frequency ..................................................................... 40
Table 5 Reasons for Not Using Central Backup Location ....................... 40
Table 6: Cross tab of How Employees at Different Levels Share Information with Coworkers ................................................................. 42
Table 7: Reasons for Sharing Information Only with Team Members .......... 43
Table 8: Other Methods of Sharing Information ....................................... 46
Table 9: Other Sources of Information Other than Own Self .................... 50
Table 10: Problems Experienced Using Existing Knowledge Management Practices ................................................................. 52
Table 11: Sample Sizes for Different Sizes of Population at 95 Percent Level of Certainty ................................................................. 72
CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Managers have increasingly turned their attention towards management models that place people and intellectual capital at the center of organization (Stewart, 1997). Newman (1998) said that the society is aware of what they expect due to information explosion hence companies have to think outside their current organizations. According to Grey (1998), companies have to serve customers well, remain in business and reduce product development time, empower employees, capture information, create knowledge, share and learn.

Today many organizations are reliant on the knowledge and competence of individual organizational members. A number of management theorists such as Drucker (1995) and Agyris (1999) have contributed to the evolution of knowledge management. Researchers at Harvard Business School have examined various facets of managing knowledge.

Knowledge has emerged as the differentiating factor for organizations in the late 1990s. In the past decades companies relied on economies of scale, marketing and sales proficiency, or the ‘quality’ and ‘customer service’ movements to drive their competitiveness. Parity in quality and service is increasingly becoming the norm across all industries (Koulopoulos, 1998).

According to Hibbard (1997) firms that know when to make the right moves in rapidly changing markets and show their vigilance in learning new ways to turn competency into an endless stream of new products into the markets. He further argued that these firms are innovative because they have combined information
technology with human resource and leadership to create a corporate learning culture that fosters knowledge storing, sharing and creation. K. C Laudon and J. P. Laudon (2002) argued that knowledge management depends on organizational learning, which involves individual learning. According to literature available there has been an increased recognition of the importance of organizational knowledge that has been accompanied by concern on how to deal with exponential increases in the amount of available knowledge.

Beckman (1999) defines knowledge management as the formalization of and access to experience, knowledge and expertise that create new capabilities to enable superior performance, encourage innovation and enhance customer value. The ultimate goal of knowledge management is to improve the performance of both individual employees and the organization as a whole. It complements and enhances other organizational initiatives such as Total Quality Management (TQM), Business Process Reengineering (BPR) and organizational learning providing a new urgent focus to sustain competitive position (Newman, 1998)

Universities are knowledge based in nature. They openly share their own knowledge and skills with others. Kidwell, Vander Linde and Johnson (2000) of PriceWaterhouseCoopers (UK) argued that colleges and universities have significant opportunities to apply knowledge management practices to support every part of their mission of education to public service to research. Implementing knowledge management practices wisely is a lesson that the smartest organizations in the corporate sectors are learning all over again.

In today’s environment, higher education institutions are subject to the same pressures of the market place as business organizations. There is tremendous value to higher education institutions that develop initiatives to share knowledge
to achieve business objectives. Nokia has applied knowledge management to encourage innovation in its Research and Development function. The company uses knowledge management practices to make sense of the market trends and customer requirements. It quickly puts that knowledge into practice in the product development pipeline. The company delivers mobile communication product about every 25 days (Kidwell et al 2000).

United States International University is based in Nairobi, Kenya. The university’s mission statement is to promote the discovery and application of knowledge, the acquisition of skills and the development of intellect and character in a manner, which prepares students to contribute effectively and ethically as citizens of a changing and increasingly technological world (United States International University, 2003). It is important for USIU to manage its knowledge assets to be able to achieve its mission. Both the Kenyan Commission of Higher Education (CHE) and Western Association of Schools and Colleges (WASC) accredit USIU, which is one of the six regional accrediting associations in the United States.

In a recent study by Koech (2002), it is evident that most organizations in Kenya have not adapted knowledge management. For many people knowledge management is not well understood and for some they have no idea of its existence. Koech also found out that lack of understanding knowledge management is a major inhibitor for Kenyan organizations implementing knowledge management. There is no study that has been done in the past to establish the state of knowledge management at USIU.
1.2 Statement of the Problem

Knowledge is the basis for, and the driver of, our post-industrial economy. Knowledge is the next paradigm shift in computing following data processing (1945-1965) and information management (1966-1995). For knowledge to be of value it must be focused, current, tested and shared (Grey, 1998).

Though many global organizations such as British Petroleum (BP), General Motors, Hewlett-Packard and John Deer practice knowledge management, it is still a gray area in Kenya. According to a recent research carried out by Koech (2002) knowledge management is not commonly practiced in business organizations in Kenya apart from a few multinational companies.

Using knowledge management techniques and technologies in higher education is as vital as it is in the corporate sector. If done effectively it can lead to better decision making capabilities, shorter product lifecycles such as curriculum development, improved academic and administrative services, and reduced costs.

This study investigated the knowledge management practices used at USIU and in particular it entailed:

- Storage methods for important data and information at USIU
- The flow of information at USIU
- Identification of any knowledge management practices at USIU and problems faced when using them.
1.3 General Objective

The major objective of the study was to establish the state of knowledge management at USIU.

1.4 Specific Objectives

The specific objectives were to find out:

- How data and information is stored at USIU
- How information is shared among employees at USIU
- The knowledge management practices and initiatives that are employed at USIU
- If there are any problems experienced when using knowledge management practices that may be identified at USIU

1.5 Justification of Study

Knowledge has become the key economic resource and the dominant and perhaps even the only source of competitive advantage (Drucker, 1999). Knowledge management is a way for organizations to adapt to the changing turbulent business environment.

It is important for USIU to adopt knowledge management as a strategy to keep abreast with changes in environment and to maintain a competitive edge. According to Kihara (2003), USIU was one of the six-chartered private universities in Kenya accredited by CHE. In addition to this category of universities, the commission recognizes six public universities, six private registered universities and five private universities that are operating under letters if interim authority. The number of private universities has increased in
the past five years. Therefore it is important for USIU to develop strategies that will enable it to maintain a competitive edge in the market.

Grey (1998) argued that organizations should apply knowledge management to serve customers well. To remain in business they must reduce their cycle time, shorten product development time, improve customer service, empower employees, innovate and deliver high quality products. Kidwell et al (2000) argued that using knowledge management techniques and technologies in higher education is as vital as it is in the corporate sector. They further argued that if done effectively it can lead to better decision-making, reduced product development cycle for example curriculum development and research, improved academic and administrative services, and reduced costs.

The study will enable the university’s stakeholders to know the current state of knowledge management at USIU. It is important to point out there is no information on the state of knowledge management in universities. Other researchers can carry out similar studies in other institutions of learning in Kenya.

1.6 Scope of the Study

The geographical coverage of the study was limited to the USIU campus in Nairobi. The study included full-time employees at USIU who work in departments that do not lease out any part of their functions or those that lease out a small part of their functions. The concentration was Academic Affairs, Enrollment Management, Finance and Administration, Human Resource, Information Technology, Public Relations, Student Affairs departments and Vice Chancellor’s Office. The total population full-time employees in these departments at the time of the study was 200. The number was drawn from the
USIU Internal Telephone Directory for the year 2003/2004. The time period of the study was one month.

1.7 Definition of Terms

1.7.1 Best Practices
According to K. C. Laudon and J. P. Laudon (2002), best practices are the most successful solutions or problem solving methods that have been developed by a specific organization or industry. This knowledge can be preserved as organizational memory to train future employees or help them in decision making.

1.7.2 Corporate Memory
Van Heijst, van der Speck and Kruizinga (1996) defined corporate memory as an explicit disembodied, persist representation of knowledge and information in an organization.

1.7.3 Data
Chapple (2003) defined data as a series of facts or statements that may have been collected, stored, processed and/or manipulated but have not been organized or placed into context. Bentley (1998) defined data as the outcome of specific transactions

1.7.4 Data Mining
Data mining is the process of searching a large database to discover previously unknown patterns (Turban, King, Lee and Viehland, 2004). According to K. C. Laudon, K. and J. P. Laudon (2002), it is the analysis of large pools of data to find patterns and rules that can be used to guide decision-making and predict future
behavior. Algorithms and statistical tools are used to find patterns in data gathered from customers.

1.7.5 Data Warehouse
K. C. Laudon and J. P. Laudon (2002) defined a data warehouse as a database with reporting and query tools, that stores current and historical data extracted from various operational system and consolidated for management reporting and analysis.

1.7.6 Document Management System (DMS)
It is a software based on the underlying database in which unstructured objects (i.e. documents) are indexed and tracked. Document Management Systems monitor security, log access to files and maintain a history of file content. It can be used to capture knowledge (Koulopoulos and Frappalo, 1999).

1.7.7 E-learning
It can be broadly defined as networked, online learning that takes place in form of context and uses a range of multimedia technologies (Garrison and Anderson, 2003). It refers to using of electronic applications and processes to learn. It is the delivery of a learning, training or education program by electronic means. Content is delivered via the Internet, intranet, audiotape or satellite TV.

1.7.8 Electronic Publishing
H. M. Deitel, P. J. Deitel and Stein (2001) defined electronic publishing as the digital creation and distribution of electronic content including printed materials, music, video and software.

1.7.9 Groupware
It refers to software products that support groups of people who share a common task or goal and collaborate on its accomplishment. It supports sharing
of resources (Turban, King, Lee and Viehland, 2004) it. It enhances collaboration by allowing exchanging of ideas electronically (K. C. Laudon and J. P. Laudon 2002)

1.7.10 Higher Education Institution (HEI)
According to the US Nuclear Regulatory Commission (2004), HEI maybe defined as an institution offering at least two but less than four years of college-level study beyond the high school level, leading to a diploma or an associate degree, or wholly or principally creditable toward a baccalaureate degree; or offers academic study beyond the bachelor of arts or bachelor of science degree, whether or not leading to a certificate of any higher degree in the liberal arts and sciences. It may also award any degree in a professional field beyond the first professional degree.

1.7.11 Information
Drucker (1988) defined information as data endowed with relevance and purpose. According to Wilson (1999), information is data whose form and content are useful for a particular task after having been formalized, classified, processed and formatted.

1.7.12 Intranet
Intranet is a network within a single company that enables access to company information using tools of the Internet such as web browsers and E-mail. Only staff within a company can access the intranet, which will be password protected (Chaffey, Meyuer, Johnston and Ellis-Chadwick, 2000).

According to K. C. Laudon, K. and J. P. Laudon (2002) intranets provide a rich set of tools for creating collaborative environments in which members of an organization can exchange ideas, share information and work together on
projects of their physical location. It is an internal network based on Internet and Wide World Web technology.

**1.7.13 Knowledge**

According to the Webster’s Third New International Dictionary of English Language (1993), knowledge is defined as the familiarity, awareness, or understanding gained through experience or study. According to Fahey and Prusak (1998) knowledge is information combined with experience, context interpretation, reflection, initiation and creation.

**1.7.14 Knowledge Management**

Beckman (1999) defined knowledge management as the formalization of and access to experience, knowledge and expertise that create new capabilities to enable superior performance, encourage innovation and enhance customer value. Turban, King, Lee and Viehland (2004) define it as the process of creating or capturing knowledge, storing and protecting it, updating and maintaining and using it.

**1.7.15 Organizational Learning**

K. C. Laudon and J. P. Laudon (2002) defined organizational learning as the creation of new standard operating procedures and business processes that reflect organization’s processes. Di Bella (1995) defined organizational learning as the process of actively creating, acquiring and communicating information and knowledge through the involvement of all members of an organization in a continual basis.

**1.7.16 Portal**

According to Turban, King, Lee and Viehland (2004), is an information gateway that attempts to address information overload through an intranet-based
environment. It reduces the time lost by employees looking for relevant and accurate information. K. C. Laudon and J. P. Laudon (2002) define it as a website or other service that provides an initial point to the web or internal organizational data.

1.7.17 Repository

According to the Wepomedia online dictionary for computer and Internet terms (2004) repository generically refers to a central place where data is stored and maintained. A repository can be a place where multiple databases or files are located for distribution over a network, or a repository can be a location that is directly accessible to the user without having to travel across a network. McFadden, Hoffer and Prescott (1999) defined repository as a centralized knowledge base of all data definitions, data relationships, screen and report formats, and other system components.

1.8 Chapter Summary

This chapter has dealt with the issue of knowledge management, giving a background of the problem, statement of the problem, justification of the study, objectives and scope of the study. The next chapter will cover literature review.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter presents an overview of the literature that has been reviewed in relation to the research objectives. This includes literature review on data and information storage, information sharing, knowledge management practices and initiatives, and challenges to implementing knowledge management.

2.2 Data and Information Storage

Data consists of a series of facts or statements that may have been collected, stored, processed and/or manipulated but have not been organized or placed into context. When data is organized, it becomes information. Information can be processed and used to draw generalized conclusions or knowledge (Chapple, 2003).

People usually select and combine bits of data that they find relevant to create information. Information comes in many forms such as graphs, tables, newsletters, emails and procedure manuals.

It is important to store data and information in organizations to be able to reuse it in decision making and to share among employees. Decision makers need concise, reliable information about current operations, trends and changes in the environment. The key to data storage is the extent to which access to the data is required. The concept of access incorporates a number of requirements principal
among them, being frequency of access, access paths, access authority and access restrictions (Bentley, 1998).

According to Bentley (1998) frequency of access can be in five categories namely frequent, regular, routine, infrequent and rarely. He argued that if data is accessed every few minutes, it needs to be stored in a different way from data, which is accessed only once a year. He categorized the access paths into five categories namely individual, department, division, company and group. He further argued that if only one person accesses data it can probably be located with that person. If everybody in the company needs to access it and need to be held on a suitable database and can be located where it can be reached by everybody. In addition to this he said if only certain people have access to data because of its sensitivity for example price information, it will need to be stored in software and/or hardware protected environment. He categorized access authority levels to include open, restricted, confidential, secret and closed. He argued that access restriction levels can be categorized into the following categories: no restriction, delete, amend, update and read only. He said that this will depend on the way data is used once it is accessed. This could be restricted to read only or it can be added and not changed or changed but not deleted categories.

Information is stored using different methods. These include filing system, databases, intranet and Help Desk application (Koech 2002). The storage method used varies from organization to organization. Database systems require that the organization reorganize the strategic role of information and begin to actively manage and plan for information as a corporate resource. Internal databases can be linked to the web. This will enable employees gain access to organizational data whether at the office premises or not as long as there is Internet connection (Bentley, 1998). Deitel et al (2001) argue that the intranet can be used to enhance
information and knowledge sharing. Messerchmitt (2001) argued that information can also be stored in repositories. He further argued that the advantage for this is one person can modify stored information and the other users can see it immediately.

According to K. C. Laudon and J. P. Laudon (2002) data and information are stored in various storage media. They argue that the most commonly used ones are the floppy disk, magnetic tape, Compact Disk/Read Only Memory (CD-ROM) Compact Disk-Recordable (CD-R) and hard disk. The other storage devices include Compact Disk-Rewritable (CD-RW), Digital Versatile Disk and Zip Disks. Storage Area Networks (SAN), Redundant Array Inexpensive Disk (RAID) and online storage are alternative storage technologies.

According to K. C. Laudon and J. P. Laudon (2002) the floppy disks are the most popular storage device used since it is inexpensive. The magnetic tape is popular for storing large amounts of data and is the popular for backup since it is inexpensive. The CD-ROM is often used to store computer programs. In the past the programs were stored on floppy disks. However, when the CD-ROM entered the market this stopped. The storage capacity of the CD-ROM is much more than floppy disks. The CD-RW and DVD can also be used to store massive amounts of data and images. The DVD can be used to store full length videos. According to Deitel et al (2001) SAN provides high capacity in relation to data and information storage. They further argue that it enables storage of large amounts of data and is also used to provide backup services. According to K. C. Laudon and J. P. Laudon (2002), RAID is a disk storage technology used to boost disk performance by packaging more than 100 smaller disk drives into a single unit. It can be used to take backup.
2.3 Information Sharing

Marchand, Kettenger and Rollins (2002), say that executives, consultants and academicians have become more aware of the powerful role information plays in business. Today, the quality, relevance and use of customer, competitive and operational information differentiates firms from many industries like chemicals, concrete, and oil to insurance, banking and retailing. Information is often an organizations most valuable asset. Information resources are utilized and relied on by many people throughout the organization. According to Bentley (1998) information is power. This power aspect of information is managed in organizations by limiting access to information. According to Liautaud and Hammock (2000) many people believe that in owning a certain piece of information is the key to power. They accumulate lots of information and tend to share very little. Managers are hesitant about allowing employees or other departments to share their data.

Marchand et al (2002) define information sharing as the willingness to provide others with information in an appropriate and collaborative fashion. They argue that sharing means to divide and apportion in shares between two or more recipients. Information sharing is critical because intellectual assets unlike physical assets increase in value with the use of information (Koech, 2002). Sharing information is an important economic predictor of organizational success (Davenport and Prusak, 1998).

Marchand et al (2002) argued that sharing information must always occur in some context, among friends, within a family and in a business organization. They further argue how individuals share information can be affected by five preconditions for sharing information in a company. The preconditions they cited include:
• The existence of some common language and shared meanings among members of an organization. People cannot share information in a company if they do not share a common language and meanings of basic ideas. If multiple meanings are associated with common terms, it becomes difficult to share information.

• The existence of a prior relationship between members of an organization based on how much is known about relative to their roles and positions in the company. People will share certain information with subordinates that they may not share with their bosses. They will also share more information with experienced members of the team versus new members.

• The perceived level of trust among people who can share information. The assumption is the level of perceived trust is directly proportional to the willingness to share information. The level of trust is a function of perceptions that if information is shared, it will not be used against the person sharing it.

• There needs to be a shared purpose or ownership of results. Sharing information is important to achieve improved business results.

• Sharing of information must be part of the company’s culture. Organizational members are expected to share information.

Wiig (1993) argued there are different methods of sharing information. These include updating databases with new information, preparing written documents, meetings and brainstorming sessions. The methods used to share information vary from organization to organization. Marchand et al (2002) proposed that there are many ways to share information. These include through meetings,
reports, emails, and memos or informally through conversations in the hallway or outside of working hours. They argued that act of sharing information will depend on the type of information being shared. Public or non-sensitive information is more easily shared inside company than sensitive information. They further argued that sharing information about errors, failures or mistakes may have personal disadvantages but learning advantages for the company.

Technology can be used to facilitate information sharing. It may be publishing on the corporate intranet and using shared folders on the network. Corporate portals are also used to share information. They allow a person to customize their desktops and to show information from a variety of source within the organization (K. C. Laudon and J. P. Laudon, 2002). Bohlin, Shand and Whitehead (1997) argued that the most basic form of the intranet is used to disseminate information widely within the organization. The intranet provides an effective means of collecting and transferring new information. It is also used to collect information from multiple sources within the organization and transfer to other places in the organization where it would be beneficial.

According to Simons (1995) people are constantly balancing their own interests with the organization’s interests deciding whether and how to contribute their personal expertise, experience and skills to the welfare of the organization. It is important for an organization’s senior management to encourage employees to share experiences and information. Liautaud and Hammock (2000) argued that sharing of information and revealing insights will allow the whole organization to benefit. In an effort to make their companies more reactive to change, companies need to decentralize their organization and empower workers to make decisions faster.
There are many barriers to information sharing. An example is lack of trust between people. It is important to such barriers being removed. Some of these barriers are cultural in nature such as language and ethnicity. Cultural sensitivity will overcome some of these obstacles. Technical barriers such as lack of understanding can be lessened or eliminated by appropriate training (Koech, 2002).

However, there are risks in information sharing. These include a threat to confidentiality, integrity and availability. In such a case information that needs to be protected must be identified. According to Bentley (1998) in the modern world of computers companies use authority levels and passwords for controlling access to information held in corporate databases.

According to existing literature (Simons, 1995; Davenport and Prusak, 1998; Liataud and Hammock, 2000) it is important to share information, (Bentley, 1998; Davenport, 1997) limit access to various types of information, and (K.C., Laudon and J. P. Laudon, 2002; Bohlin et al, 1997; Liebowitz and Beckman, 1998) technology can be used to facilitate the act of information sharing. It is important to develop trust among employees to enable sharing of information more freely. Managers view information as a tool for power. This may not make it easy for them to share information with their subordinates or colleagues in other departments. Thus sharing information in an organization is a complex act.

2.4 Knowledge Management Practices and Initiatives

The mere existence of knowledge somewhere in the organization is of little benefit, it becomes a valuable corporate asset only when it is accessible and its value increases with the level of accessibility (Davenport et al, 1998). Knowledge management is the formalization of and access to experience, knowledge and
expertise that create new capabilities, enable superior performance, encourage innovation and enhance customer value (Beckman, 1999). Knowledge management is basically involves identifying intellectual assets within the organization, generating new knowledge for competitive advantage within the organization and making information available to employees. Hence it is important to apply initiatives that will enable this process.

Organizations are increasingly focusing their efforts on knowledge management practices to foster creation, sharing and integration of knowledge (Gray and Chan, 2000). According to different sources of literature (Liebowitz and Beckman, 1998; Bukowitz and Williams, 1999; Pfeiffer and Sutton, 2000; K. C. Laudon and J. P. Laudon, 2002) knowledge management can be practiced in various ways and different organizations adopt different technologies. These include:

- E-learning
- Intranet
- Document Management Systems
- Information Retrieval Engines
- Electronic Publishing Systems
- Groupware Systems
- Help-desk Applications
- Data warehousing tools
- Data mining tools

E-learning is one of the most important knowledge management practices, which higher education institutions should have as an advantage. It is usually geared towards students and not employees as part of capitalizing on their knowledge
as an intellectual asset. Two-thirds of 700 companies polled in a Delphi Group study use online resources for training employees (Lloyd, 2001).

Knowledge management initiatives include portals that use the web to span communication across the entire enterprise and to promote relationships (Roberts-Witt, 1999; Ruber, 2000). Companies with a focus on knowledge management pay close attention to issues of collaboration, organizational learning, best practices, intellectual property management, document management and using data effectively. According to Liebowitz and Beckman (1998) collaboration is the sharing of ideas, opinions and perspectives between knowledgeable people with differing backgrounds. It is one of the principles of organizational learning.

Any piece of knowledge or information that contributes to the performance of an organization should be stored in the corporate memory. This includes knowledge about products, production process, customers, marketing strategies, financial results, lessons learned, strategic plans and goals among other considerations (van Heijst, van der Spek and Kruizinga, 1996). They further proposed that corporate memories need a facility for deciding who should be informed about a particular new piece of knowledge. According to Liebowitz and Beckman (1998) many organizations are using intranets to aid in building knowledge repositories within the organizations for improved sharing of knowledge and information.

### 2.4.1 Knowledge Hierarchy

According to Beckman (1998) as one moves up the Knowledge Hierarchy from data to capability, there is increasing breadth, depth, meaning, conceptualization and value in knowledge. The hierarchy is shown in figure.
According to Wilson (1996) at the most basic level knowledge is that what is known and it is an essentially human form of information. By selecting and analyzing data we can produce information and by selecting and combining information we can generate knowledge. He further proposed the processing cycle below.

Figure 2: The Processing Cycle
Source: Wilson, D., Managing Knowledge, 1996

There is a link in the processing chain form data to action. Data is processed to produce information to produce knowledge. Knowledge is used to produce decisions and finally action. According to Chapple (2003) knowledge consists of generalized conceptual statements that have been developed through the analysis of information.
2.4.2 Knowledge Management Process

Beckman (1998) proposed a comprehensive eight-stage process for knowledge management. This is shown in figure 4 below:

Identify
↓
Collect
↓
Select
↓
Store
↓
Share
↓
Apply
↓
Create
↓
Sell

Figure 3: Knowledge Management Process
Source: Liebowitz and Beckman, Knowledge Organizations: What Every Manager Should Know, 1998

(i) The Identify stage determines which core competencies are critical to success.
(ii) The Collect stage deals with acquiring existing knowledge, skills, theories and experience needed to create the selected core competencies and knowledge domains.

(iii) The Select stage takes continuous stream of collected, formalized knowledge and assesses its value.

(iv) The Store stage takes the nuggets of knowledge and classifies them and adds them to the corporate memory which resides in three different forms: human minds, on paper and electronically.

(v) The Share stage retrieves knowledge from the corporate memory and makes it accessible to users.

(vi) The Apply stage retrieves and uses the needed knowledge in performing tasks, solving problems, making decisions, researching ideas and learning.

(vii) The Create stage uncovers new knowledge through many avenues, such as benchmarking and best practices.

(viii) The Sell stage is where new products and services are crafted from the intellectual capital to be marketed external to the enterprise.

2.4.3 Types of Knowledge

In 1967 Michael Polanyi a philosopher pointed out that there are two types of knowledge. The two types of knowledge are explicit knowledge and tacit knowledge (Nonaka and Takeuchi, 1995; Bukowitz and Williams, 1999). Some authors such as Beckman (1999) draw a distinction between tacit and implicit knowledge, defining tacit knowledge as that which cannot be written down, and implicit knowledge as that which can be written down but has not been written down yet.
Explicit knowledge is easily processed by a computer, transmitted electronically or stored in databases, corporate intranets and intellectual property portfolios (Clark, 1999). Explicit knowledge can be articulated in formal language and easily transmitted amongst individuals. It can be widely distributed. It can be captured and exchanged throughout the organization. According to Kidwell et al (2000) explicit knowledge is packaged, easily codified, communicable and transferable.

Tacit knowledge resides in the minds of individual employees but has not been documented in structured form (Davenport, Delong & Beers, 1998). Tacit knowledge can potentially represent great value to the organization, it is more difficult to capture and diffuse. According to Liebowitz & Beckman (1998), knowledge is considered to be tacit when it is not readily available for inspection either through documents or discussion. According to Nonaka and Takeuchi (1995), tacit knowledge consists partly of technical skills and partly cognitive skills. The technical dimension is kind of informal and hard-to-pin down skills. For example a brain surgeon’s expertise after years of study and experience. According to Kidwell et al (2000) tacit knowledge is personal, context specific, difficult to formalize, difficult to communicate and more difficult to transfer compared to explicit knowledge.

2.4.4 Why Adopt Knowledge Management

According to Marshall, Prusak and Shpilberg (1997), Senior Executives are increasingly recognizing that knowledge and learning represent the preeminent source of sustainable advantage in a fast moving, highly competitive environment. They argue that it is important for employee base to be leveraged to the organizational level where it can be assessed, synthesized, augmented and deployed for benefit of all organizations and individuals must learn rapidly and
uniformly across different functions and levels of organizations. Garvin (1993) argued that effective learning organizations are skilled at five main activities, which include:

- Problem solving
- Experimenting with new ideas
- Learning from mistakes
- Learning from the success of others which are recorded as best practices
- Transferring knowledge quickly and effectively throughout the organization.

Marquardt and Reynolds (1994) said they believed that organizational learning occurs through the following activities:

- Collaboration across functions
- Encourage exploration and experimentation
- Identify best practices
- Updating organizational memory with new learning.

The 2001 survey by Knowledge Management magazine and IDC also found that of those companies that practice knowledge management, the top reasons are to:

- Retain expertise of personnel (51.9%)
- Increase customer satisfaction (43.1%)
- Improve profits, grow revenues (37.5%)
- Support e-business initiatives (24.7%)
- Shorten product development cycles (23.0%)
- Provide project workspace (11.7%)
According to this survey, it was concluded that it is important for higher education institutions to respond to the growth of online courses, cyber colleges and virtual universities. The same reasons found out for companies that practice knowledge management by the survey should be the same reasons that higher education institutions should adopt knowledge management.

According to Kidwell et al (2000) knowledge management can be applied in the institutions of higher education in the areas of research process, curriculum development, student and alumni services, administrative services and strategic planning. According to Milam (2001) with knowledge management colleges and universities will be able to:

- Increase student retention and graduation rates
- Retain a technology workforce in the face of severe employee shortages
- Expand new web-based offerings
- Work to analyze the cost effective use of technology to meet more enrollment
- Compete in an environment where institutions cross state and national borders to meet student needs anytime and anywhere.

2.5 Challenges to implementing Knowledge Management

There are challenges to the implementation of knowledge management. The challenges may cause users to experience problems when using knowledge management techniques. The 2001 survey by Knowledge Management magazine and IDC documents the following as challenges to implementation of knowledge management:

- Employees have no time for knowledge management
- Current culture does not encourage sharing
- Lack of understanding of knowledge management and benefits
- Inability to measure financial benefits of knowledge management
- Lack of skill in knowledge management techniques
- Organization's processes are not designed for knowledge management
- Lack of appropriate technology
- Lack of incentives or rewards to share information
- Lack of commitment from senior management

According to Koech (2002) the main challenges she found in her study were lack of appropriate technology and lack of understanding knowledge management.

### 2.6 Chapter Summary

The chapter represents a summary of literature related to data and information storage, information sharing, knowledge practices and initiatives and challenges of adopting knowledge management.
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

The study was expected to establish the extent knowledge management is practiced in USIU. This chapter outlines the overall methodology that was used to carry out the study. This includes the research design, population and sample size, data collection methods, research procedures, data analysis methods and chapter summary.

3.2 Research Design

The approach used was a case study. Robson (2002) defines case study as a strategy for doing research, which involves empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence. The study took place at USIU.

According to Sekaran (2003), case studies are important in understanding certain phenomena in an organization. The need to focus on USIU arose from the fact that no such study has been done in the past. An advantage of case study research design is the ability of the researcher to gain real insight into the nature of practice in field such as information technology (Gable, 1994). According to Sekaran (2003), a case study can sometimes be used as a tool in managerial decision-making. Hence the results of this case study will provide the management with an insight on the knowledge management initiatives used at USIU.
3.3 Population and Sampling Design

3.3.1 Population

According to Sekaran (2003), population refers to the entire group of people, events or things of interest that the researcher wishes to investigate. The population was made up of full time employees who belong to departments whose functions that support the core business of the university are not leased out or a small part of the functions is leased out on short-term basis. The population was drawn from Academic Affairs, Enrollment Management, Finance and Administration, Human Resource, Information Technology, Public Relations, Student Affairs departments and Vice Chancellor’s Office. The number of full-time employees used for the study was 200, which included faculty and staff. The list of respondents was drawn from the USIU Internal Telephone Directory for the year 2003/2004. Employees who work in the Security, Maintenance and Transport departments were excluded because a large part of their functions are leased out.

3.3.2 Sampling Design and Sample Size

3.3.2.1 Sampling Frame

Cooper and Schindler (2001) define a sampling frame as a list of all elements from which the sample is actually drawn and is closely related to the population. The sampling frame used was the list of employees in the university’s telephone directory for the year 2003/2004. This excluded employees belonging to Security, Maintenance, and Transport departments.
3.3.2.2 Sampling Technique

According to Cooper and Schindler (2001), probability sampling approach allows each case an equal chance to be selected from the population. The probability sampling method that was used in the study was proportionate stratified random method. According to Cooper and Schindler (2001), proportionate stratified sampling is where each stratum is properly represented so that the sample drawn from it is proportionate to the stratum’s share of the population.

The population was divided into departments, which is a naturally occurring stratum. A sample was then randomly selected from each stratum. After determining the number of respondents was selected in each department, respondents who were given questionnaires were randomly selected from the telephone directory list. The sample was drawn from Academic Affairs, Enrollment Management, Student Affairs, Finance & Administration, Human Resource, Public Relations, Information Technology departments and the Vice Chancellor’s Office.

3.3.2.3 Sampling Size

According to the Webster’s Third New International Dictionary of English Language (1993), a sample is a finite part of a statistical population whose properties are studied to gain information about the whole population. According to Sekaran (2003) confidence refers to the probability that a given percentage of results of research are true. He further argues that in social science research a 95% confidence level is accepted as conventional. The confidence (certainty) level assumed for this study was 95%.

Saunders, Lewis and Thornhill (2003) came up with a guide for different population sizes at 95% level of confidence (see table 21 in Appendix III).
Saunders et al made an assumption that data will be collected from all cases in the sample. According to this guide if the population is made up of 200 subjects, the sample size that may be used is 132 subjects at 95% level of certainty. The sample size for the study that was carried out is 132 employees. The number of employees selected in each department was calculated using the formula

\[
\text{Total number of full time employees in the department} \times 132
\]

The formula is in relation to the fact that proportionate stratified sampling was applied in the study. The number of employees randomly selected from each department is shown in table 1 below:

<table>
<thead>
<tr>
<th>Department</th>
<th>Total Population</th>
<th>Ratio of Department's Population to the Study Population</th>
<th>Number of Respondents in Sample</th>
<th>Ratio of Respondents drawn from Department to the Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Affairs</td>
<td>84</td>
<td>42%</td>
<td>56</td>
<td>42.4%</td>
</tr>
<tr>
<td>Enrollment Management</td>
<td>17</td>
<td>8.5%</td>
<td>11</td>
<td>8.3%</td>
</tr>
<tr>
<td>Finance and Administration</td>
<td>47</td>
<td>23.5%</td>
<td>31</td>
<td>23.5%</td>
</tr>
<tr>
<td>Human Resource</td>
<td>5</td>
<td>2.5%</td>
<td>3</td>
<td>2.3%</td>
</tr>
<tr>
<td>Information Technology</td>
<td>9</td>
<td>4.5%</td>
<td>6</td>
<td>4.5%</td>
</tr>
<tr>
<td>Public Relations</td>
<td>2</td>
<td>1%</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Student Affairs</td>
<td>33</td>
<td>16.5%</td>
<td>22</td>
<td>16.7%</td>
</tr>
<tr>
<td>Vice Chancellor's Office</td>
<td>3</td>
<td>1.5%</td>
<td>2</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>132</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

### 3.4 Data Collection Methods

Primary data was collected by means of a questionnaire. Questionnaires were delivered personally to the selected respondents. Questionnaire is a general
term that includes all techniques of data collection in which each person is asked to respond to the same set of questions in a predetermined order (deVaus, 2002).

The questionnaire was made up of both open ended and closed questions. Different questions were used to collects information for each objective as shown on table 2 below:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>To find out how data and information is stored in USIU</td>
<td>2, 3, 4, 5, 6</td>
</tr>
<tr>
<td>To find out how information is shared among employees in USIU</td>
<td>7, 8, 9, 11, 12</td>
</tr>
<tr>
<td>To find out if any knowledge management practices are employed in USIU</td>
<td>13, 14</td>
</tr>
<tr>
<td>To find out if there are any problems experienced when using knowledge management practices that may be identified</td>
<td>16, 17</td>
</tr>
</tbody>
</table>

### 3.5 Research Procedures

The questionnaire was developed relation to the research objectives to ensure the relevance of the data collection instrument. A draft questionnaire was developed and tested with 10 respondents selected at random. It was redesigned according to the feedback received from these respondents. The final version of the questionnaire (see Appendix V) was sent to the respondents in the selected sample. It was accompanied with a letter of introduction (Appendix IV) stating the purpose of the study. Permission to carry out research within the university was sought from the Deputy Vice Chancellor, Academic Affairs in the first week.
of June, 2004. Once this was granted the questionnaire was then tested during the second week of June. The questionnaires were self administered by the researcher to the selected respondents the third week of June. The respondents were given two weeks to respond. However due to unavoidable circumstances, some respondents took more than 2 weeks to fill the questionnaire.

3.6 Data Analysis Methods

The data collected was statistically analysed using SPSS software. The data collected for close-ended questions was coded and input into the SPSS statistical package. After this the researcher checked for errors in relation to what data was filled in the questionnaires and made correction for any. The next step was to use In-built statistical formulas to manipulate the desired measures of estimate (frequency). The frequency and percentage distribution were used to highlight the magnitude of variation between the various observed variables. The analysis was done for each research objective.

The open-ended questions’ responses were summarized and categorized according to common themes and presented tables in Excel worksheets. The cumulative frequency tables created in SPSS were copied into Excel worksheet. The data in cumulative frequency tables were depicted in multiple bar charts using excel. Cross tabs were created in SPSS to compare variations between two classification variables. Pie charts were created using SPSS.

Data was presented in distribution tables, cross tabs, pie charts and multiple bar charts. However, it is not possible to create multiple bar charts in SPSS package and also it is not possible to create cumulative frequency tables in Excel.
3.7 Chapter Summary

The research methodology and design has been described in this chapter. It describes the research design, research design, population, sampling design, and data collection methods and data analysis.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the findings from the questionnaire. The results are divided into five broad categories according to the research objectives. These are data and information storage, information sharing, knowledge management practices and initiatives and problems experienced when using existing knowledge management practices and initiatives.

4.2 Data and Information Storage

Figure 4: Data and Information Storage

Figure 4 above shows that 90% of the respondents said they store data and information while 10% of the respondents neither store data nor information.
4.2.1 Data and Information Storage Methods

![Bar chart showing method of storage]

**Figure 5: Data and Information Storage Methods**

Figure 5 shows that the most common method used to store data and information by respondents was traditional filing. About sixty six percent (65.6%) of the respondents said they used it to store data and information while 34.4% of the respondents said they do not use it. About forty nine percent (48.9%) of the respondents said they use databases and folders on the intranet to store data and information while 51.1% said they do not use both methods to store data and information. About sixteen (15.6%) of the respondents said they use Help Desk applications to store data and information while 84.4% of the respondents said they do not use it to store data and information. Respondents could select more than one option from the list of options that was given.
4.2.2 Data and Information Backup

![Pie chart showing data and information backup](image)

Figure 6: Data and Information Backup

Figure 6 above shows that 83.3% of the respondents said they backup data and information while 16.7% said they did not backup data and information.

4.2.2.1 Storage Media

![Bar chart showing storage media usage](image)

Figure 7: Storage Media

As shown in figure 7 above the most popular storage medium used for backup of data and information among the respondents was the floppy diskette and it was chosen by 71.11% of the respondents. About twelve percent (12.2%) of the
respondents said they use the magnetic tape to backup data and information while 87.8% of the respondents said they do not use it. About thirty-three percent (33.3%) said they use CD-RW to backup data and information while 66.7% of the respondents said they do not use it. About six percent (5.6%) use DVD to backup data and information while 94.4% of the respondents said they do not use it.

Table 3 : Other Storage Media Used

<table>
<thead>
<tr>
<th>Storage Medium</th>
<th>Distribution of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Hard disk (mirror technology)</td>
<td>3</td>
</tr>
<tr>
<td>Flash disk</td>
<td>2</td>
</tr>
<tr>
<td>Hard disk (University LAN Server)</td>
<td>2</td>
</tr>
<tr>
<td>Zip disk</td>
<td>1</td>
</tr>
<tr>
<td>CD-R</td>
<td>1</td>
</tr>
</tbody>
</table>

In question 5 there was an option labelled ‘other’ where respondents who selected it were expected to specify any other media they use to back up data and information. Table 3 above shows the results respondents. About three percent (3.3%) of the respondents said they use mirrored hard disk, 2.2% said they use flash disk, 2.2 % said they use the LAN server, 1.1% said they use zip disk and 1.1% said they use CD-R to backup data and information.
Figure 8: Frequency of Data and Information Backup

Figure 8 shows that 34.4% of the respondents said they backup data and information on a daily basis while 65.6% said they do not backup on a daily basis. About seven percent (6.7%) of the respondents said they backup up data and information twice a week while 93.3% said they do not backup data and information twice a week. About twenty-one percent (21.1%) said they backup data and information on a weekly basis while 78.9% do not backup data and information on a weekly basis. About sixteen percent (15.6%) of the respondents said they backup data and information on a monthly basis while 84.4% do not backup data on a monthly basis. Some respondents selected more than one frequency of backup. The reason they gave is they backup different types of data after different intervals of time. There were respondents who did not select any option listed but chose the 'other' option. Respondents who selected the 'other' option were expected to specify the frequency.
Table 4 ‘Other’ Frequency

<table>
<thead>
<tr>
<th>Frequency of Backup</th>
<th>Distribution of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Occasionally</td>
<td>11</td>
</tr>
<tr>
<td>Random</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 4 above shows that 12.2% of the respondents said they took backup of data and information occasionally such as when they make changes to student records. About two percent (2.2%) of the respondents said they backup data and information at random such as when the computer they are using has to go for repair or when a new computer is bought to replace the one they are using.

4.2.2.3 Central Location for Backup

![Central Backup](image)

Figure 9: Central Backup

Figure 9 above shows that 60% of the respondents said they backup data and information at a central location while 23.3% said they do not backup data and information at a central location. The remaining 16.7% felt the question was not applicable. The latter were a group of respondents who had said they do not backup data and information in question 4.

Table 5 Reasons for Not Using Central Backup Location

<table>
<thead>
<tr>
<th>Reasons for not using central backup location</th>
<th>Distribution of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>No policy for backing up data</td>
<td>1</td>
</tr>
<tr>
<td>Does not trust network security</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 5 shows that 1.1% of the respondents said they did not use a central backup location since there is no laid down policy on the location of where to backup data and information. About two percent (2.2%) of the respondents said they do not use a central location to back up their data because they do not trust the university’s computer network and central server security. They further said they do not have a guarantee that other persons will not be able to access and corrupt the data and information.

4.3 Information Sharing

4.3.1 Sharing information with Coworkers

![Pie Chart]

Figure 10: Share Information with Coworkers

Figure 11 above shows that 95.6% of the respondents said they share information with their coworkers while 4.4% said they do not share information with their coworkers.
4.3.2 Share Information with Coworkers at Different Levels

Table 6: Cross tab of How Employees at Different Levels Share Information with Coworkers

<table>
<thead>
<tr>
<th>Level</th>
<th>Share Information with Coworkers Crosstabulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Share Information With Coworkers Distribution of respondents</td>
</tr>
<tr>
<td></td>
<td>Yes Frequency</td>
</tr>
<tr>
<td>Top Management</td>
<td>7</td>
</tr>
<tr>
<td>Middle Management</td>
<td>31</td>
</tr>
<tr>
<td>Supervisory</td>
<td>13</td>
</tr>
<tr>
<td>Clerical/Administrative Support</td>
<td>23</td>
</tr>
<tr>
<td>Subordinate</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 6 above shows all respondents who belong to the top management, middle management and subordinate levels said they shared information with their coworkers. About ninety one percent (91.2%) of respondents who had said they belonged to the middle management level said they share information with their coworkers while 8.8% who said they do not share information with their coworkers. About ninety-three percent (92.9%) of the respondents who had said they belonged to the supervisory level said they shared information with their coworkers while 7.1% who said they do not share information with coworkers.

4.3.3 Share Information Within Teams

![Figure 11: Work in a Team](image)

United States International University
As shown in figure 11 above 85.6% of the respondents said they work in a team while 14.4% of the respondents said they do not work in a team. Some respondents who work in a team said there is some information they share only with their team members. They gave reasons for this and these are shown in table 7 below.

Table 7: Reasons for Sharing Information Only with Team Members

<table>
<thead>
<tr>
<th>Reasons for sharing some Information only with team</th>
<th>Distribution of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevant to team only</td>
<td>Frequency 38</td>
</tr>
<tr>
<td>Maintain confidentiality</td>
<td>Percent 42.2</td>
</tr>
<tr>
<td>Information is specialized in nature</td>
<td>Frequency 26</td>
</tr>
<tr>
<td></td>
<td>Percent 28.9</td>
</tr>
<tr>
<td></td>
<td>Frequency 2</td>
</tr>
<tr>
<td></td>
<td>Percent 2.2</td>
</tr>
</tbody>
</table>

About forty-two percent (42.2%) of the respondents said the reason for sharing some information only with their team members was due to the fact that the information is only relevant to the team. About twenty-nine percent (28.9%) of the respondents said this was the case in order to maintain confidentiality of certain matters within the university such as what is discussed at the Management Council, Faculty Senate, Coordinators, Tender Committee and Budget meetings. About two percent (2.2%) of the respondents gave the reason that the information was specialized in nature such as information for coding the system and setting up network data security.
4.3.4 Frequency of Sharing Information with Coworkers

![Chart showing frequency of sharing information]

**Figure 12: Frequency of Sharing Information with Coworkers**

Figure 12 above shows that 50% of the respondents said they share information on a daily basis and the same ratio of respondents who said they do not share information on a daily basis. Twenty per cent of the respondents said they share information on a weekly basis while 80% said they do not share information on a weekly basis. About four percent (4.4%) of the respondents said they share information after every fortnight while 95.6% of the respondents said they do not share information after a fortnight. About twenty one percent (21.1%) of the respondents said they share information on a monthly basis while to 78.9% of the respondents said they do not share information on a monthly basis. Some respondents chose more than one frequency interval of sharing information with their coworkers.

There are respondents who for the ‘other’ option of the question 9 (a) filled out how frequently they share information. 18.9% of the respondents said they share
information when there is need to such as depending on the task at hand and if they get new information that may be of use to their colleagues.

4.3.5 Methods of Sharing Information

![Graph showing methods of sharing information]

Figure 13: Methods of Sharing Information

Figure 13 above shows that the most popular method of respondents used to share information with coworkers at USIU was meetings. About sixty-three percent (63.3%) of the respondents said they shared information using this method while 36.7% said they did not use it to share information. About forty-two percent (42.2%) of the respondents said they updated databases with new information as a method of sharing information while 57.8% who said they did not use it to share information. About fifty-one percent (51.1%) of the respondents said they prepared new documents as a method to share information while 48.9% said they do not use it to share information. About thirty-four percent (34.4%) of the respondents said they used brainstorming sessions to share information while 65.6% said they do not use it to share information. Some respondents selected more than one option. There are
respondents who for the 'other' option of the question 9 (b) filled out how they share information and this was not among the listed option of the question.

**Table 8: Other Methods of Sharing Information**

<table>
<thead>
<tr>
<th>Other Methods of Sharing Information</th>
<th>Distribution of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Sharing folders on the intranet</td>
<td>2</td>
</tr>
<tr>
<td>Answer enquiries</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 8 above shows that 2.2% of the respondents said they shared information by creating folders on the Intranet. About one percent (1.1%) of the respondents said they shared information by method of answering enquiries made about the university such as admission requirements.
4.3.6 Sources of Information

4.3.6.1 Own Self

Figure 14: Source of Information is Own Self

Figure 14 above shows that 73.3% of the respondents said some of the information they shared with their coworkers was from themselves while 26.7% of the respondents said this was not the case.

Figure 15: Source of Information is Own Self at Different Levels

Figure 15 above shows 85.7% of respondents who belong to the top management level said they share information whose source is themselves (own self) while the
remaining 14.3% of the respondents who belong to this level said this was not the case. About eighty-two percent (82.4%) of respondents who belong to the middle management level said they share information whose source is own self while the remaining 17.6% of the respondents who belong to this level said this was not the case. About sixty-four percent (64.3%) of respondents who belong to the supervisory level said they share information whose source is own self while the remaining 35.7% of the respondents who belong to this level said this was not the case. About sixty-five percent (65.2%) of respondents who belong to the clerical/administrative Support level said they share information whose source is own self while the remaining 35.8% of the respondents who belong to this level said this was not the case. About sixty-seven (66.7%) of respondents who belong to the subordinate level said they share information whose source is themselves while the remaining 33.3% of the respondents who belong to this level said this was not the case.

4.3.6.2 Other Sources

![Pie chart showing 67.8% Yes and 32.2% No](image)

**Figure 16: Other Sources of Information Other than Own Self**

Figure 16 above shows that 67.8% of the respondents said some of the information they share with their colleagues is from other sources while 32.2% of the respondents said that this was not the case.
Figure 17: Other Sources of Information Other than Own Self at Different Levels

Figure 17 above shows that all respondents (100%) who said they belonged to the top level management said they share information from other sources other than own self. About sixty-five percent (64.7%) of the respondents who belong to the middle management level said they share information from other sources other than own self while the remaining 35.3% of the respondents who belong to this level said this was not the case. About seventy-one percent (71.4%) of respondents who belong to the Supervisory level said they share information from other sources other than own self while the remaining 28.6% of the respondents who belong to this level said this was not the case. About seventy-eight percent (78.3%) of respondents who belong to the Clerical/Administrative Support level said they share information from other sources other than own self while the remaining 21.7% of the respondents who belong to this level said this was not the case. About thirty-three percent (33.3%) of respondents who belong to the subordinate level said they share information from other sources other than themselves while the remaining 66.7% of the respondents who belong to this level said this was not the case.
Table 9: Other Sources of Information Other than Own Self

<table>
<thead>
<tr>
<th>Other Sources of Information Shared Other than Own Self</th>
<th>Distribution of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td>16</td>
</tr>
<tr>
<td>Other Departments</td>
<td>10</td>
</tr>
<tr>
<td>Colleagues in the same department</td>
<td>10</td>
</tr>
<tr>
<td>Media</td>
<td>8</td>
</tr>
<tr>
<td>Journals</td>
<td>7</td>
</tr>
<tr>
<td>Books</td>
<td>6</td>
</tr>
<tr>
<td>Suppliers</td>
<td>6</td>
</tr>
<tr>
<td>Students</td>
<td>4</td>
</tr>
<tr>
<td>Publisher catalogs</td>
<td>4</td>
</tr>
<tr>
<td>Databases (OPAC and CARS)</td>
<td>3</td>
</tr>
<tr>
<td>Consultancy firms</td>
<td>2</td>
</tr>
<tr>
<td>CD-ROM that accompany books</td>
<td>1</td>
</tr>
<tr>
<td>Auditors</td>
<td>1</td>
</tr>
<tr>
<td>Bank</td>
<td>1</td>
</tr>
<tr>
<td>Workshops and Seminars</td>
<td>1</td>
</tr>
<tr>
<td>Higher Education Loan Boards (HELB)</td>
<td>1</td>
</tr>
<tr>
<td>Lawyers</td>
<td>1</td>
</tr>
</tbody>
</table>

Some of the respondents who had said they use other sources of information listed these sources by answering question 11 (b). Table 9 above shows the summary of these sources.

4.5 Knowledge Management Practices and Initiatives

![Chart showing the use of knowledge management practices and initiatives](chart.png)

Figure 18: Existing Knowledge Management Practices and Initiatives
Figure 18 shows that 26.7% of the respondents said they use E-learning to do their work while 73.3% said they do not use it to do their work. About sixty-three percent (63.3%) of the respondents said they use the Intranet to do their work while 36.7% of the respondents who do not use it to do their work. Thirty percent of the respondents said they use Document Management System (DMS) to do their work while 70% said they do not use it to do their work. About sixteen percent (15.6%) of the respondents said they use Groupware to do their work while 84.4% said they do not use it to do their work. About twenty-seven percent (26.7%) of the respondents said they use Help Desk applications to do their work while 73.3% of the respondents said they do not use it to do their work. Information collected from personal interviews when picking up the questionnaires from respondents showed that Groupware and Help Desk applications are not used in USIU.

4.6 Problems Experienced Using Knowledge Management Practices

![Pie chart showing usage of knowledge management practices]

Figure 19: Experience Problems Using Existing Knowledge Management Practices

Figure 19 above shows that 42.2% of the respondents said they experience problems when using any of the existing knowledge management practices and initiatives while 46.7% said they did not experience any problems. About eleven percent (11.1%) of the respondents did not answer the question was applicable since they had not selected any of the practices and initiatives
Table 10: Problems Experienced Using Existing Knowledge Management Practices

<table>
<thead>
<tr>
<th>Problems Experienced When Using Practices</th>
<th>Distribution of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Network downtime</td>
<td>13</td>
</tr>
<tr>
<td>Not easy to use</td>
<td>9</td>
</tr>
<tr>
<td>Slow network speed</td>
<td>6</td>
</tr>
<tr>
<td>Server breakdown</td>
<td>5</td>
</tr>
<tr>
<td>Inefficient backup services</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 10 above shows the problems respondents said they experience when using knowledge management technologies. The most popular ones were network downtime (14.4%) and the practices were not easy to use (10%).

4.7 Chapter Summary

Employees stored data and information using different methods of storage and media storage devices. There were some employees who backup data and information. There was a culture of sharing information at USIU among employees. The frequency of sharing information ranged from daily, weekly, fortnightly, monthly to occasionally. The sources of information shared varied. There were knowledge management practices and initiatives at USIU. Some employees experience problems when using these practices.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section deals with a summary of the major findings of the study, a discussion on the interpretation of the results, the conclusions drawn form the findings and recommendations for improvement and for further studies.

5.2 Summary

The purpose of the study was to establish the state of knowledge management at USIU. The following were the specific objectives of the study to find out:

- How data and information is stored at USIU
- How information is shared among employees at USIU
- The Knowledge management practices and initiatives employed at USIU
- If there are any problems experienced when using knowledge management practices that may be identified

The research design that was used was case study. The population of the study was 200 and a sample of 132 was drawn from the population using proportionate stratified sampling. The strata used were departments. The population was drawn from the Academic Affairs, Finance & Administration, Human Resource, Enrollment Management, Information Technology, Public Relations, Student Affairs and Vice Chancellor’s Office. The researcher developed a data collection instrument, which was a questionnaire.
The major findings of the study were data and information was stored in different ways that included traditional filing, databases and folders on the intranet. Some employees take a backup of data and information and the frequency of backup varied. Information was shared across departments and within departments. The media used to take backup were diskette, CD-ROM, CD-RW, magnetic tape, hard disk, flash disk and zip disk. There were some knowledge management practices existent at USIU. These included E-learning, Intranet, DMS, Groupware and Help Desk applications. Some employees experienced problems when using the existing knowledge management practices.

5.3 Discussion

5.3.1 Data and Information Storage Methods

Most respondents said they do store data and information. The most popular method of storing data and information is traditional filing. Results show that other methods used to store data and information were databases and folders on the intranet. Some respondents said that they stored data and information using Help Desk applications. This is in line with what Bentley (1998) and Koech (2002) argued that data and information is stored using different methods. These included traditional filing, databases, intranets, Help Desk applications. The results are also in line with what K. C. Laudon and J. P. Laudon (2002) stated that and information can be stored on shared folders on the network (intranet). The results are not in line with what Messerchmitt (2001) said that information can also be stored using repositories.
The results show that the most popular storage media used for backup is the floppy disks. This is in line with what K. C. Laudon and J. P. Laudon (2002) said that the floppy disks are the most popular storage device used for backup. The other storage media used for backup were magnetic tape, CD-ROM, CD-RW, CD-R, DVD, hard disk, flash disk and zip disk. This is in line with what K. C. and J. P. Laudon (2002) who said that data and information can be stored using a variety of storage devices, which include magnetic tape, CD-ROM, CD-R, hard disk and zip disk. However, it is not in line with what Deitel et al (2001) had argued that SAN can also be used as an alternative backup device.

5.3.2 Information Sharing

Information sharing is part of the culture of the institution. Most of the respondents (95.6%) share information with their coworkers. This is not in line with Liautaud and Hammock (2000) argued that many people in organizations accumulate lots of information and tend to share very little.

All respondents who belong to the top management, middle management and subordinate levels said they shared information with their coworkers. Also most of respondents who had said they belonged to the middle management (91.2%) and the supervisory (92.9%) levels said they share information with their coworkers. This is line what Marchand et al (2002) stated that sharing information must always occur in some context, among friends, within a family and in a business organization. This is not in line with what Liataud and Hammock (2000) said that managers are hesitant about allowing employees or other departments to share their information.

Majority of the respondents (63.3%) said they shared information in meetings. The other methods used to share information were updating databases with new information, preparing written documents and brainstorming. This is line with
what Wiig (1993) proposed as methods of sharing of in an organization. The results are also in line with what Marchand et al (2002) proposed as some methods of sharing information in organizations, which were through meetings, reports, emails and memos. Reports, emails and memos are written documents.

Very few respondents (2.2%) said they use folders on the intranet to share information. This method is in line with what K. C. Laudon and J. P. Laudon (2002) said that technology may be used to facilitate information sharing. They argued use of shared folders on the intranet on the network to share information is facilitated by technology This is also in line with what Bohlin et al (1997) said that the intranet can be used to disseminate information widely within the organization. However, the results are not in line with what K. C. Laudon and J. P. Laudon (2002) proposed corporate portals as a method of sharing information.

5.3.3 Knowledge Management Practices and Initiatives

The results show the knowledge management practices and initiatives used at USIU included E-learning, Intranet, DMS, Groupware and Help Desk application. The most popular one is the intranet (57%). The practices and initiatives the respondents selected were in line with those in existing literature. (Wiig, 1993; Davenport et al, 1998; Liebowtiz and Beckman, 1998; K. C. Laudon and J. P. Laudon, 2002).

However, it is not in line with the other knowledge management practices and initiatives the same authors that include Information Retrieval Engines, Electronic Publishing Systems, Data Warehousing tools and Data Mining Tools. It is also not in line with what Robberts-Witt (1999) and Ruber (2000) said portals are knowledge management that use the web to span communication across the entire enterprise and to promote relationships.
The Intranet is the most popular initiative. This in line with what Clark (1999) said about it being popular and to share explicit knowledge. The next popular initiative is E-learning. Lloyd (2001) said that E-learning is the most important knowledge management initiative for higher education institutions to have as an advantage. However, the results do not show it as the most popular. Lloyd (2001) further said that this initiative can be used to train employees.

5.3.4 Problems Faced Using Existing Knowledge Management Practices

Some respondents (46.7%) said they do not experience any problems while other respondents (42.2%) said that at times they experienced some problems when using any existing knowledge management practices and initiatives. The problems they said they experienced included network downtime and server breakdown hence not being able access the server at times, slow network speed which makes it longer to complete a give task and very few respondents (5.6%) who said that they found it hard to use some of the technologies and this is due to the fact that their skills are not updated at the same pace the technology is updated within USIU.

The results are in line with the challenges identified by the 2001 Knowledge Management magazine and IDC survey which included lack of skill of knowledge management techniques and lack of appropriate technology. They are also in line with what Koech (2002) found out.

It is important for users to be trained when a new technology is introduced or when it is updated. This will make them accept the technology and work with it better. Otherwise the benefits of the investment made may not be realized fully.
5.4 Conclusions

5.4.1 Data and Information Storage Methods

The study shows that data and information were stored using different storage methods and media. It can be concluded that there is a culture of storing data and information at USIU but there is no policy for taking backup.

5.4.2 Information Sharing

Information was shared using different methods. Information was shared across departments and across different levels of the institution. It can be concluded that there is a culture of sharing information and management are committed to sharing information with their subordinates.

5.4.3 Knowledge Management Practices and Initiatives

There are knowledge management practices and initiatives used at USIU. These are used in different departments and the most popular one is the Intranet. It can be concluded that the popularity of each initiative varies from one to another.

5.4.4 Problems Faced Using Existing Knowledge Management Practices

Some employees experience some problems when using the existing knowledge management practices and initiatives. It can be concluded that training the employees and upgrading the existing technology can sort out these problems. Also it is important to note whenever a new initiative is introduced, the relevant technology that is needed to use it is available.
5.5 Recommendations

5.5.1 Recommendations For Improvement

There is need to have clear policy on storage and backup of data and information. This will ensure that in case of any calamity such as fire all the important information is safe and it can be restored. Employees need to be sensitized on the importance of the same.

Portals and repositories should be use store data and information. This will ensure that information that is needed through out the organization is easily accessed. Also it would be important to employ technologies such as SAN to store data and information.

Employees should be encouraged to use the intranet for other issues such as to store data and to publish information they wish to share with others such as reports and memos. This will increase the audience that is able to access and share the information. It will also reduce the possibility of duplication of research work.

There is need to have a clear-cut policy on knowledge management initiative and practices at USIU. This will enable USIU to meet its mission statement and vision. If possible the idea of creating a knowledge management office be included in the next five-year strategic plan.

There is need to turn USIU into a learning organization. This will enable it to handle any new business strategies better. E-learning can be used for internal staff training programs and any external corporate training courses offered by the university.
5.5.2 Recommendations For Further Research

The following areas were found to be necessary for further research:

- There is need to measure the benefits of the existing knowledge management practices at USIU using the commonly used balance score card created by Kaplan and Norton in 1992.
- There is need to carry out a similar study in other universities in Kenya.
- There is need to carry out a knowledge management audit in organizations that practice knowledge management in Kenya.
REFERENCES


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United States International University, Strategic Plan 2002-2006


Webster’s Third New International Dictionary of English Language (1993), Springfield, US: Merrian-Webster


68

### APPENDIX I: BUDGET

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (Kshs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationery</td>
<td>4,000</td>
</tr>
<tr>
<td>Binding (Proposal and Final Copies of Project Report)</td>
<td>2,000</td>
</tr>
<tr>
<td>Typing</td>
<td>2,500</td>
</tr>
<tr>
<td>Printing</td>
<td>4,500</td>
</tr>
<tr>
<td>Photocopying</td>
<td>3,000</td>
</tr>
<tr>
<td>Computer lab fees</td>
<td>9,600</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>3,000</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td><strong>28,600</strong></td>
</tr>
</tbody>
</table>
### APPENDIX II : PROJECT SCHEDULE

| WEEKS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| ACTIVITY | Literature Review | Compiling research proposal | Review proposal | Seek permission to carry out research | Select sample | Pretest and revise questionnaire | Distribute questionnaire | Collect questionnaire | Code and tabulate responses | Analysis of coded data | Writing report | Submission of draft copy | Make corrections proposed by supervisor | Submission of second draft copy |
### APPENDIX III: SAMPLE SIZES FOR DIFFERENT POPULATION SIZES

Table 11  Sample Sizes for Different Sizes of Population at 95 Percent Level of Certainty

Source: Business Research Methods by Saunders, Lewis and Thornhill, 3rd edition

<table>
<thead>
<tr>
<th>Population</th>
<th>Margin of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5%</td>
</tr>
<tr>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>100</td>
<td>79</td>
</tr>
<tr>
<td>150</td>
<td>108</td>
</tr>
<tr>
<td>200</td>
<td>132</td>
</tr>
<tr>
<td>250</td>
<td>151</td>
</tr>
<tr>
<td>300</td>
<td>168</td>
</tr>
<tr>
<td>400</td>
<td>196</td>
</tr>
<tr>
<td>500</td>
<td>217</td>
</tr>
<tr>
<td>750</td>
<td>254</td>
</tr>
<tr>
<td>1000</td>
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</tr>
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<td>2000</td>
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<td>5000</td>
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</tr>
<tr>
<td>100000</td>
<td>383</td>
</tr>
<tr>
<td>1000000</td>
<td>384</td>
</tr>
<tr>
<td>10000000</td>
<td>384</td>
</tr>
</tbody>
</table>

Assumption: data will be collected from all respondents.
APPENDIX IV : LETTER OF INTRODUCTION

USIU

UNITED STATES INTERNATIONAL UNIVERSITY

11th June 2004

Dear Respondent,

RE: SURVEY ON KNOWLEDGE MANAGEMENT

I am a graduate student of Business Administration at USIU. I have designed a questionnaire to gather information on knowledge management practices in USIU. The study to be carried out is for a management project paper as a requirement in partial fulfillment of the MBA degree.

Knowledge management is an important aspect in any organization. It enables it to encourage innovation and to maintain a competitive edge in the industry it operates in.

It is estimated that it will take approximately 30 minutes of your time to fill the questionnaire. Please note that any information you give will be treated extremely confidential and at no instance will it be used for any other purpose other than the project paper.

Your assistance will be highly appreciated. I look forward to your prompt response.

Yours faithfully,

PAULINE BWIRE
APPENDIX V: QUESTIONNAIRE

SECTION I: PERSONAL DATA

1. (a) What is your gender? Please tick one option below
   - Male
   - Female

(b) Please identify which department you belong to? Please tick one option below
   - Academic Affairs
   - Finance & Administration
   - Human Resource
   - Public Relations
   - Information Technology
   - Public Relations
   - Student Affairs
   - Vice Chancellor’s Office

(c) Which level in the organization do you belong to? Please tick one option below
   - Top Management
   - Middle Management
   - Supervisory
   - Clerical/Administrative Support
   - Subordinate

Skip part (d) if you are not a faculty member and go to SECTION II

(d) (i) Which school do you belong to? Please tick one option below
   - School of Business
   - School of Arts and Sciences

(ii) Which rank do you belong to? Please tick one option below
   - Full Professor
   - Associate Professor
   - Assistant Professor
   - Lecturer

SECTION II: DATA AND INFORMATION STORAGE

2. Do you store data and information?
   - Yes
   - No

3. (a) How do you store data and information?
   Please tick relevant option(s) below
   - Traditional filing
   - Databases
   - Folders on intranet
   - Help Desk applications
   - Other (Please specify)

4. (a) Do you backup data and information?
   - Yes
   - No

(b) Do you back up data and information using
   Please tick where appropriate
   - Diskettes?
   - Magnetic tape?
   - CD-RW
   - (Rewritable CD-ROM)?
   - DVD
   - (Digital Video Disc)?
   - Other (Please specify)

5. (a) How regularly do you back up data and information?
   Please tick relevant option(s)
   - Daily basis
   - Twice a week
   - Once a week
   - Once a month
   - Other (Please specify)
(b) Give an explanation if the frequency of backup selected in question 6 (a) above is more than one (if you selected more than one option)

6. (a) Is there a central place where you backup data and information?

Please tick one option

☐ Yes
☐ No

(b) If NO list where you backup your data and information. Give reasons for this.

SECTION III: INFORMATION SHARING

7. (a) Do you share information with your coworkers?

Please tick one option below

☐ Yes
☐ No

If YES and you are a member of FACULTY go to part (c).

(b) Who do you share information with?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clerical/Administrative Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subordinate staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Please specify who)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(c) Do you share information with members of other departments?

☐ Yes
☐ No

9. (a) How often do you share information?

Please tick relevant option(s) below

Daily basis
☐ Yes ☐ No
Weekly basis
☐ Yes ☐ No
After every fortnight
☐ Yes ☐ No
Monthly basis
☐ Yes ☐ No
Other (Please specify)

(b) How do you share information?

Please tick relevant option(s) below

Updating databases with new information
☐ Yes ☐ No
Preparing written documents
☐ Yes ☐ No
Meetings
☐ Yes ☐ No
Brainstorming sessions
☐ Yes ☐ No
Other (Please specify)

10. (a) Do you work in a team?

Please tick one option below

☐ Yes
☐ No

(b) If YES, are there instances where you share information only with your team members? Give reasons for this.
11. (a) What are the sources of the information you share?

Please tick relevant option(s) below

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own Self</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other sources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) If you selected other sources, please list these below

__________________________________
__________________________________
__________________________________

12. a) Is there information that you use when carrying out your duties that you do not share with others?

Please tick one option below

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

(b) If YES, please give your reasons below

__________________________________
__________________________________
__________________________________

SECTION IV: KNOWLEDGE MANAGEMENT PRACTICES

Knowledge management is the collection of processes that govern the creation, dissemination and utilization of knowledge

Knowledge is the integration of ideas, experience, intuition, skill, and lessons learned that has the potential to create value for a business, its employees, its products and services, its customers and ultimately its shareholders by informing decisions and improving actions

13. Do you think knowledge management is practiced at USIU?

Please tick one option below

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
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<tbody>
<tr>
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</tbody>
</table>

14. Which of the following technologies do you use to do your work?

Tick where appropriate below

<table>
<thead>
<tr>
<th>Technology</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intranet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document Management System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groupware</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help Desk application</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. Please list below which skills enable you to use the technologies you selected in question 14?

__________________________________
__________________________________
__________________________________

SECTION V: PROBLEMS EXPERIENCED

16. Are there any problems you experience in using any of the technologies you selected in question 14? Please select one option below

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If ‘No’ go to question 19

17. Please list the problems you experience

__________________________________
__________________________________
__________________________________

76
18. What solutions would you recommend to solve the problems


19. What do you think is the future of knowledge management at USIU?


