Cape Peninsula
University of Technology

FACTORS INFLUENCING KNOWLEDGE SHARING AT A SELECTED TERTIARY INSTITUTION IN SOUTH AFRICA

by

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DECLARATION

I, Lee-Anne Lesley Harker, declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

24 August 2014

Signed **Date**

ABSTRACT

The aim of this study was to understand the factors that affect knowledge sharing among higher education academics. The main research objective was to identify factors to contribute to a framework to guide the implementation of knowledge sharing strategies for the higher education context. To achieve this objective, four research questions were explored in order to reveal factors affecting the formation, growth, stability and institutionalisation of knowledge sharing in a network of aligned interest. Knowledge sharing is not institutionalised in higher education in South Africa and therefore knowledge in higher education is not always captured nor systematically organised. This leads to a lack of retention of valuable institutional know-how, inefficient work processes and reinventing the wheel.

The actor-network theory (ANT) underpinned the research to tease out factors influencing knowledge sharing. This was a qualitative study, employing an interpretive case study methodology. Interviews were conducted with eighteen academic staff members from a University of Technology (UoT) in South Africa. The population comprised all academic staff members from the selected UoT who are actively participating in teaching and learning activities. The population was limited to academics appointed at a level of junior lecturer, lecturer and senior lecturer and excluded Associate Professors and Professors. Semi-structured interviews enabled the factors to be explored inductively.

Social, process and technology factors continue to pervade knowledge sharing in the higher education context. Process factors receive significant focus before human and technology factors. The organisational culture and management support emerged as the most important human factors. The culture of the institution has determined its entrenched behaviour. Management are tasked to embody the leadership skills that are required for the gradual assimilation of the principles of knowledge sharing in the institution. Practical recommendations are made in light of these factors, and the general framework, for implementation by managers on an institutional, faculty and departmental level.

Keywords: Knowledge management, knowledge sharing, actor-network theory, higher education, Sociotechnical factors

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GLOSSARY

Terms/Acronyms/Abbreviations	Definition/Explanation
ANT	Actor-network theory
HOD	Head of department
HOS	Head of school
HR	Human resources
ICT	Information and communications technology
IS	Information system
IT	Information technology
Knowledge sharing actor-network	Network of aligned interest for knowledge sharing
UoT	University of Technology

CHAPTER ONE: INTRODUCTION

1.1. Background

It is commonplace within practice, and is outlined in the literature, that information and knowledge within higher education institutions is fragmented and not systematically stored for easy retrieval (Khalil, 2012:43-44; Rowley, 2000:329). The researcher, an academic staff member working for a University of Technology (UoT), has observed this over the last nine years within her department and faculty. Starting out as a new staff member in 2005, there was no central knowledge repository for new academic staff members as a means for enabling them to perform their job efficiently and effectively. New staff members are referred to a subject coordinator to obtain the information they need and to learn about the policies, procedures, and processes. The problem with this is that the subject coordinator only assists in respect of providing the content and curriculum-related information to get them started. Furthermore, they do not always have the time to assist them with subsequent acquisition of knowledge in the form of lessons learned, best practice or know-how.

There are certain aspects of the job that cannot be learned from documents or books, but that only existing staff members can assist with due to their experience in working for the institution over a period of time. Finding key persons and knowledge experts to assist is often a difficult task when trying to access various forms of knowledge essential for the job of an academic. Academics can teach several different subjects, which means that they will work with different subject groups from time to time. This means that the process of finding the right person to provide the right knowledge is started all over again. Unless the knowledge related to that subject is systematically captured in a form that is easily retrievable by subsequent lecturers of the subject, the process can be laborious. Academic staff members also find it difficult to locate pertinent documents due to the fact that they are frequently not centrally stored and updated nor are they systematically organised. When an academic staff member leaves the institution, they often leave with the knowledge that they have accumulated over the period of their tenure. This knowledge base has to be rebuilt by a new staff member. Valuable time is wasted due to ‘reinventing the wheel’ and losing out on the know-how that is not captured for other staff members to exploit.

1.2. Rationale

Higher education is in the knowledge business (Sulisworo, 2012:113). The activities of academics include knowledge creation through research, knowledge dissemination through teaching, and other academic services (Biasutti & El-Deghaidy, 2012:863). According to Malik (2005:120), research creates knowledge and teaching disseminates knowledge. These activities, however, focus mainly on knowledge creation and dissemination between academics and students, and academics and the public. There is a need for knowledge

creation and sharing among academic staff. According to Khalil (2012:44, 56), knowledge sharing amongst academics does not always occur in higher education, the problem being that academics and academic departments tend to work in silos (Khalil, 2012:43). A series of unrelated knowledge-based activities is not sufficient (Rowley, 2000:329).

Knowledge creation and sharing should encompass issues around academic content, policies, assessment practices, curriculation and recurriculation, harmonisation and best practice, to mention a few. Academic services are governed by policies and procedures which also form part of the knowledge sharing domain. Consistent collaboration among staff is advantageous in ensuring innovation in teaching, learning and assessment, and, as Khalil (2012:44) notes, innovation can only occur when tacit and explicit knowledge interact. This innovation will ensure that institutions are able to survive in a global environment (Harari-Betancourt, Rivera-Aguilera & Téllez-Bertadillo, 2010:1). As creators and disseminators of knowledge, academics are at the forefront of knowledge activities.

Educational institutions generate operational knowledge in a similar manner to that of businesses, including operational knowledge generated through the processes of teaching and learning (Chen & Lin, 2009:2). Academics want to know what their colleagues are doing and what methods and approaches they are using (Aczel, Clow, McAndrew & Taylor, 2004:740). They want opportunities to discuss ideas with their colleagues (Chen & Lin, 2009:2). Having access to the right knowledge enables people to put this knowledge into action to enhance organisational efficiency and effectiveness (Bush & Tiwana, 2005). However, knowledge sharing processes are not integrated into daily routines. In fact there is constant duplication of work among academics in particular. For example, academics recreate existing teaching materials. Arntzen, Ribière and Worasinchai (2009:129) argue that this is time that is wasted which could otherwise be spent with students or doing research, and has led to inconsistencies in lectures, especially when newly-appointed academics recreate their own lectures. A systematic approach to supplying relevant information and to make communication with relevant persons for the exchange of tacit knowledge possible is required for access to quality resources (Ravitz & Hoadley, 2005:958). Rowley (2000:329-330) indicates that there is a lack of databases that support the operational activities of an academic institution. In other words there is a lack of knowledge to support academic action and decision making. Furthermore, higher education institutions must consciously and explicitly manage their knowledge management processes (Rowley, 2000:329; Sulisworo, 2012:115). This implies that for knowledge management to be successfully implemented at higher education institutions, it must be institutionalised. Higher education institutions should have their own framework in place for knowledge management (Sulisworo, 2012:115).

Over and above the task of providing students with knowledge, higher education institutions need to generate and manage existing knowledge for future use and reference by other staff and academics, leading to improved performance through the ability to adapt, innovate and improve efficiency (Malik, 2005:118). Higher education institutions are increasingly compelled to operate like a business (Malik, 2005:118; Sulisworo, 2012:113) and as a result, are exposed to market-related pressures, in which innovation and competition are placed high on the agenda.

The challenge, then, is to determine the factors that influence knowledge sharing in an academic context, taking into account the different kinds of knowledge, namely explicit and tacit, and to ensure that not only is explicit knowledge systematically shared, but that personalisation of this knowledge occurs through the systematic sharing of tacit knowledge.

1.3. Problem statement

Knowledge Management is not generally institutionalised in higher education and therefore knowledge in higher education is not always captured nor systematically organised. This leads to the lack of retention of valuable institutional know-how, inefficient work processes and reinventing the wheel.

1.4. Research objective

The main research objective is to identify factors to contribute to a general framework to guide the implementation of knowledge management strategies for the higher education context.

1.4.1. Research sub-objectives

- To determine those factors that have an influencing role on the success of forming a knowledge sharing network.
- To determine those factors that can have a positive influence on the growth of the knowledge sharing network.
- To determine those factors that can pose a threat to the stability of a knowledge sharing network.
- To determine those factors that can help to institutionalise the knowledge sharing network.

1.5. Main research question

What factors influence knowledge sharing among higher education academics?

1.5.1. Research sub-questions

- What factors influence the enrolment of academic actors in a knowledge sharing actor-network?
- What factors influence the growth of a knowledge sharing actor-network?
- What factors influence the stability of a knowledge sharing actor-network?
- What factors influence the institutionalisation of a knowledge sharing actor-network?

1.6. Research sub-objectives, sub-questions and research method

The research sub-questions are linked to their respective research objectives and research methods.

Table 1.1: Research sub-questions

Research objectives	Sub-question	Research method
To determine those factors that have an influencing role on the success of forming a knowledge sharing network.	What factors influence the enrolment of academic actors in a knowledge sharing actor-network?	Interviews
To determine those factors that can have a positive influence on the growth of the knowledge sharing network.	What factors influence the growth of a knowledge sharing actor-network?	Interviews
To determine those factors that can pose a threat to the stability of a knowledge sharing network.	What factors influence the stability of a knowledge sharing actor-network?	Interviews
To determine those factors that can help to institutionalise the knowledge sharing network.	What factors influence the institutionalisation of a knowledge sharing actor-network?	Interviews

1.7. Problem conceptualisation

The conceptual model shown in Figure 1.1, which follows, outlines the key variables and their relationships in this research. Knowledge management is the main theme of the research, which includes several activities, one of which is knowledge sharing. The reason knowledge sharing is a point of focus is because knowledge sharing is considered as the main process of knowledge management (Hong, Kim & Suh, 2012:13093). People and technology are considered to be equally important (Biloslavo & Zornada, 2004:6) because people need to initiate and sustain the knowledge sharing, but this knowledge cannot be efficiently shared or used without the right technology.

Processes ensure that knowledge sharing takes place; hence Armistead (1999:145) states that effective learning through knowledge management is achieved when people, processes

and technology come together. These concepts are considered to be socially constructed phenomena and can be studied through the lens of actor-network theory (ANT), discussed in Chapter 3. It was also used to guide the design of the data collection instrument which is discussed in Chapter 4 of this thesis.

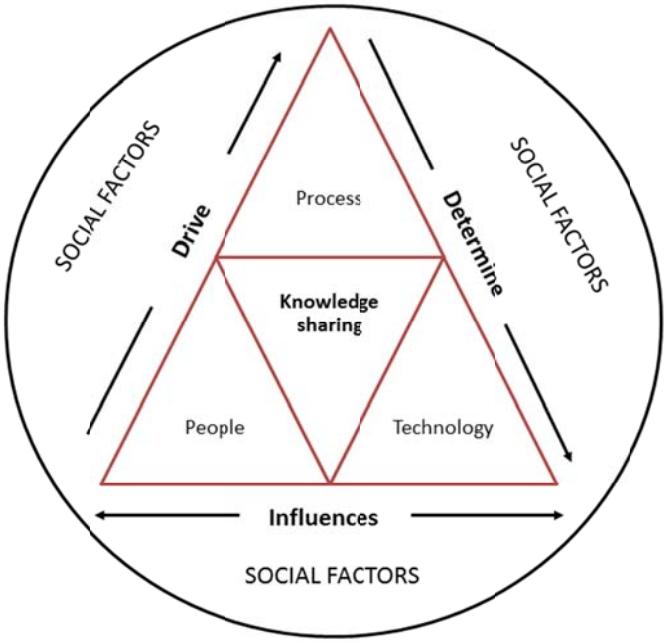

Figure 1.1: Problem conceptualisation

Figure 1.1 conceptualises the relationship between people, processes and technology to influence knowledge sharing. These are considered to be the key variables to influence knowledge sharing for the context of this study. People drive knowledge sharing because they need to initiate and sustain knowledge sharing. Processes ensure that knowledge sharing takes place by determining what must be shared and when. Technology influences people's ability to share and knowledge sharing processes by facilitating sharing and access to knowledge shared. These variables are socially constructed phenomena because people not only drive knowledge sharing but use the processes and technology that facilitate knowledge sharing. Therefore, the anticipated factors related to people, processes and technology constitute social factors for the academic domain.

1.8. Delineation of the research

The research focused specifically on the factors influencing knowledge sharing in higher education. The research was limited to interviews with academic staff members from six faculties of one higher education institution. The focus was on junior lecturers, lecturers and senior lecturers. No comparisons were made with other higher education institutions. The research did not differentiate between sharing of tacit and explicit knowledge, but focused on

knowledge sharing in general. The research does not intend to make recommendations for technology or systems that support knowledge sharing but intends to address the influencing role that technology does play in as far as knowledge sharing is concerned.

The knowledge sharing focused on knowledge that is pertinent for the positions of higher education academics, that is operational knowledge. Operational knowledge in this context pertains specifically to teaching and learning, assessment, harmonisation, best practice, lessons learned, policies, procedures, research and academic content. Non-academic departments such as Human Resources (HR), Finance and other functional areas were not included in the research. The research focused specifically on utilising ANT as a lens for understanding those issues that influence knowledge sharing within the academic domain at subject, departmental and faculty level and makes recommendations based on the factors that emerge from the research.

1.9. Significance of the research

A review of the literature has revealed gaps in empirical research into knowledge sharing factors, and further gaps exist in the literature related to knowledge sharing in higher education. Furthermore, studies that have been conducted into knowledge sharing factors focus more on social issues and do not pay attention to the influencing role of technology, given that technology is important for extending access to knowledge. This implies that knowledge sharing is a sociotechnical phenomenon which is best studied through the lens of a theory which adequately addresses the influencing role that both human and non-human entities play in a network of knowledge sharing. There are few studies that utilise ANT and even fewer that utilise ANT within the knowledge management domain. This research not only intended to bridge the gap in empirical research into both the social and technical factors influencing knowledge sharing among academic staff members at higher education institutions, but to present a novel way of looking at these knowledge sharing factors, given the scant research into knowledge sharing factors within the academic domain, utilising ANT as a theoretical lens.

The research contributed to the existing academic debate on knowledge sharing factors and knowledge management in general in the academic context. These results are captured in a general framework which can be regarded as a refinement of the original conceptual framework. Based on the general framework, a normative approach to introduce strategies to support knowledge sharing amongst academics in higher education institutions in South Africa are proposed and discussed. ANT was utilised as a theoretical lens for analysing the inhibiting factors to knowledge sharing to suggest customised strategies for the academic context.

1.10. Ethical issues

The ethical issues related to this research reside mainly in the data that was collected via the interviews with academic staff members. The data collected via interviews was subject to the approval of the institution so that care was taken not to violate the institution's privacy and confidentiality policies, nor to reveal any information that could potentially hurt the reputation of the institution or reveal private information to its competitors. Furthermore, the confidentiality of the interviewees was maintained, and this was communicated to them accordingly. The interview data was subjected to scrutiny by the interviewees for ascertaining its accuracy. This ensured that the results did not contradict their views nor that it was manipulated to obtain a predetermined outcome.

Other ethical considerations were for the veracity of the information and results presented in the research. This included the review of the literature and the analysis of the results. The literature has been properly and adequately referenced. The results of the research was analysed through the theoretical lens of ANT, but the statements made in the interviews were presented as is and were not be altered in any way to suit the research or influence the results. Interpretation was based on the concepts of ANT.

1.11. Overview of rest of dissertation

Chapter One: Introduction

Chapter one presented the case for the research. It established a background for knowledge management in general and provided a rationale for the research in the context of higher education. It further establishes the problem for knowledge sharing in higher education. The research aim, delineation and the significant contribution that this research will make to the literature are presented.

Chapter Two: Literature Review

In Chapter two the review of the literature introduces the main concepts of knowledge management and the research trends in knowledge management. Knowledge sharing in particular is highlighted as one of the main processes for sustaining knowledge management. Knowledge management research gaps in higher education and particularly knowledge sharing in higher education are revealed. A focus on technology utilised in knowledge management is also presented to motivate for the significant role that it plays in knowledge sharing, thereby providing the basis for the argument that knowledge sharing is a sociotechnical phenomenon.

Chapter Three: Underpinning Theory

Chapter three outlines the underpinning theory for the research. It provides a rationale for the selection of ANT as a theoretical lens and provides motivations for its use in the information systems domain. Furthermore, it explains the conceptual framework of ANT which will be utilised for the interpretation of the empirical research. Finally, it presents the approach that the researcher undertook when conducting the empirical research.

Chapter Four: Research design

Chapter four explains the research approach and data collection procedures as well as the analysis techniques chosen. The chapter also describes the case study, the unit of analysis and the ethical issues considered during data collection. The study wass qualitative in nature, employing an interpretive, exploratory case study research design, based on the theoretical framework of ANT. Semi-structured interviews were used to obtain the views of the respondents.

Chapter Five: Analysis of results

Chapter five provides an analysis of the empirical research with the utilisation of ANT as a theoretical lens. It also presents the results of the research, presented as a framework.

Chapter Six: Findings and discussion

Chapter six presents a discussion on the findings in relation to existing literature and makes recommendations for further research. The chapter also articulates the significance of the research and its implications.

Chapter Seven: Conclusion and future research

Chapter seven concludes the research. This chapter also articulates the contribution the research has made to the body of knowledge and illustrates how the research questions were answered.

The Appendices provide the interview schedule used in data collection, the invitation to take part in the study, ethical clearance obtained, and the transcribed interviews.

1.12. Summary

This chapter provided the background and rationale for the research. The main research problem was presented, and the objectives of the research were outlined, which are linked to the research questions. The delineation of the research and the expected contributions were outlined. Ethical issues have also been addressed here.

The next chapter reviews current literature on knowledge management and knowledge sharing within knowledge management and reveals the gaps in the literature that this

research addresses. The chapter introduction provides the background to the focus of the research, leading to the main foci within this research, including what constitutes knowledge management and positioning knowledge sharing within knowledge management, to what extent knowledge sharing has received focus in the literature, the current knowledge management foci within academia, and the role of technology. Each of these areas of research within knowledge management play a role in the research to establish the basis for the research and reveal the gaps that current literature does not address in the context of knowledge sharing among higher education academics.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

A rationale for this research has been established. In particular the research problem postulates that knowledge management is not institutionalised in higher education. As a result, knowledge in higher education is not always captured nor is it systematically organised. The problems experienced are inefficient work processes and 'reinventing the wheel' due to the lack of retention of valuable institutional know-how. In general, there is a lack of management of the existing knowledge in higher education because academics use informal methods of creating and managing knowledge. Knowledge management literature makes it clear that the most valuable resource of an organisation is the knowledge of its employees (Alavi & Leidner, 2001:108; De Brún, 2005:3). The importance of knowledge management has been highlighted in studies within business and academia (Lubega, Omona & Van der Weide, 2010:84). Studies on knowledge management show that by effectively harnessing the knowledge of an organisation through various knowledge management techniques; the right knowledge can be supplied to the right people at the right time (Holsapple, 2001:1; Hong *et al.*, 2012:13094). Thereby people are enabled to put this knowledge into action to enhance organisational efficiency and effectiveness (Bush & Tiwana, 2005). It is posited that knowledge management is an enabler of improved organisational performance, improved decision making, creating core competences, a source of competitive advantage, and an enabler for improved problem solving (Holsapple, 2001:1; Liao, 2003:155; Bush & Tiwana, 2005:86; Durcikova & Gray, 2005; Hewett & Watson, 2006; Lubega *et al.*, 2010:83). As Martin (2000:17) puts it, "[t]hat knowledge is of fundamental importance for organisations of any size and industry is no longer a question".

Knowledge management is also an enabler of organisational learning. It facilitates the continuous sharing and exchange of knowledge that perpetuates the learning process within the organisation (Lubega *et al.*, 2010:86). Three types of learning occur within an organisation as a result of knowledge management, namely: individual learning, learning through direct communication, and learning using a knowledge repository (Heisjt, Spek & Kruizinga, 1997). A knowledge repository is typically associated with the systematic storing of explicit knowledge. Direct communication is often necessary for experiential learning where tacit knowledge is acquired through consultation with experienced persons. Knowledge is considered to be a high-value form of information. The experience, context, interpretation, and reflection added through personalisation makes it more valuable than information (Beers, Davenport & De Long, 1998:43; Alavi & Leidner, 2001:109). Tacit knowledge is what people keep in their heads, whereas explicit knowledge what is captured or written down (De Brún, 2005:6). An example of tacit knowledge is an academic's know-how of how to approach teaching mathematics. An example of explicit knowledge is a

framework for assessing knowledge on different cognitive levels. The main difference between the two is that tacit knowledge cannot be accessed as easily as explicit knowledge. According to Jennex and Murray (2007) the embedded knowledge of the organisation, found in repositories, documents, processes, manuals and the like are made more valuable with the tacit knowledge - context, experience and interpretation - that a human can add. Knowledge can come from a wide range of sources, such as projects, tasks and processes; and of course the humans that create and use those processes.

Knowledge management consists of a collection of methods, techniques and tools (Liao, 2003:156) that facilitate the four activities of capturing, storing, sharing and using of knowledge (Lee, 2001:324). Although these four processes are performed sequentially, knowledge sharing is considered to be the main process of knowledge management (Hong *et al*., 2012:13093).

Most literature on knowledge management is focused mainly on the corporate world (Olfman, Raman & Ryan, 2005:311). There is little literature that focuses on the practices of knowledge management in higher education, particularly in the context of sharing among academics (Khalil, 2012:44). Even though knowledge management has been built on strong theoretical foundations such as information economics, strategic management, artificial intelligence, quality management and organisational performance management (Baskerville & Dulipovici, 2006), it was only conceptualised in the 1980s. As an emerging discipline of research, particularly in information systems, it only recently became an area of study for the academic context, but continues to receive significant focus in the literature in general, thereby sustaining its relevance. While knowledge management is widely researched, the divergent perspectives do not answer the practical questions in respect of its application to a specific context. The foci are on technological solutions, communities of practices, best practices (Bhatt, 2001:68), as well as the role that different technologies play in the knowledge management process. Few look at the sociotechnical nature of knowledge sharing. Even though there is a growing body of research on the enablers of knowledge sharing, these studies tend to focus on the social factors to do with culture and motivation and tend to neglect the technical factors (Choi, Kang & Lee, 2008:743). Knowledge management needs people, information and communication technology. People and technology are considered to be equally important (Biloslavo & Zornada, 2004:6) because people need to initiate and sustain the knowledge sharing, but this cannot be efficiently done without the right technology. Therefore, in the author’s opinion, knowledge sharing factors should be investigated not only in terms of social factors, but also technical factors.

The above introduction provides the background to knowledge management and knowledge sharing literature. It demonstrates gaps which have necessitated this research. Perhaps it

also points to ongoing research to improve understanding of knowledge management and sharing, particularly as they relate to knowledge sharing in a UoT in South Africa.

2.2. Knowledge management concepts

Before delving into the current literature on knowledge sharing in higher education and the common themes that support knowledge sharing, it is important to differentiate knowledge management from information sharing. This lays an important foundation for why knowledge management has received much focus in the literature, and why it is necessary for higher education academics to share their knowledge. In particular, it establishes the importance of knowledge sharing as a way of sustaining the flow of knowledge within the organisation to achieve organisational effectiveness and efficiency. Furthermore, given that this research focuses on sociotechnical factors affecting knowledge sharing, technology has received as much focus as social factors. The provision of suitable technologies to support knowledge management is hugely influenced by the understanding of what knowledge management is. If recommendations are to be made for strategies to promote knowledge sharing, then it is important to dispel misconceptions about knowledge management and its most important process, knowledge sharing.

2.2.1. Content and process approaches to knowledge management

The literature on knowledge management can be generalised into those studies that focus on the content approach to knowledge management and the process approach. The content approach looks to define knowledge based on its type, such as differentiating between tacit and explicit, and declarative and procedural knowledge. The process approach focuses on the *sharing* and *usage* of knowledge (Choi & Sung, 2012:5), which when combined, creates an environment where people can innovate and benefit from knowledge management. This research will be driven by both the content and process approach, underpinned by Alavi and Leidner's definition of knowledge management: "[i]dentifying and leveraging the collective knowledge in an organisation to help the organisation compete" (2001:113). This definition of knowledge management is commensurate with the concept of an organisational memory, which exists to record the accumulated memory of the organisation to avoid knowledge experts taking away their knowledge when they leave the organisation. Building organisational memories involve the knowledge management processes of capturing, storing, sharing and using of knowledge. Alavi and Leidner (2001:114) refer to these processes as creation, storage/ retrieval, transfer and application. It is knowledge sharing, however, that sustains this process for creating and maintaining an organisational memory.

2.2.2. Knowledge creation

The process of knowledge creation is achieved through the application of the four phases of Nonaka and Takeuchi's (1995) knowledge conversion life cycle, illustrated in Figure 2.1, which are interdependent. In other words, new tacit and explicit knowledge is created in a spiral as one progresses through the four phases. In the internalisation and socialisation phases new tacit knowledge is created. For example, a work process is explicit, formalised knowledge about performing the sequential activities that make up that process. By carrying out that process, new tacit knowledge is created when that person reflects on what they have done; this is internalisation, or learning by doing. As Borghoff and Pareschi (1997:5) explain, one gets more acquainted with the process and tries new ways of doing things, creating new process knowledge. This is tacit knowledge created from explicit knowledge. When people engage in non-formal ways, such as face-to-face interaction, on these work processes, this creates an environment for sharing tacit knowledge. This tacit knowledge generated from a new understanding of the work processes can enrich this process or even generate new ways of performing this process by externalisation. This is new tacit knowledge created from tacit knowledge. It is the processes of externalisation and combination that create new explicit knowledge. When new tacit knowledge is externalised, such as through developing best practice based on what has been learned, new explicit knowledge is created. This is explicit knowledge that is created from tacit knowledge. The combination phase also creates new explicit knowledge but from explicit knowledge, not from tacit knowledge. Newly acquired explicit knowledge is merged and synthesised with existing knowledge in order to create new explicit knowledge. There must be a continuous cycle of renewal and refinement to avoid explicit knowledge from becoming old. This is why knowledge is considered to be dynamic.

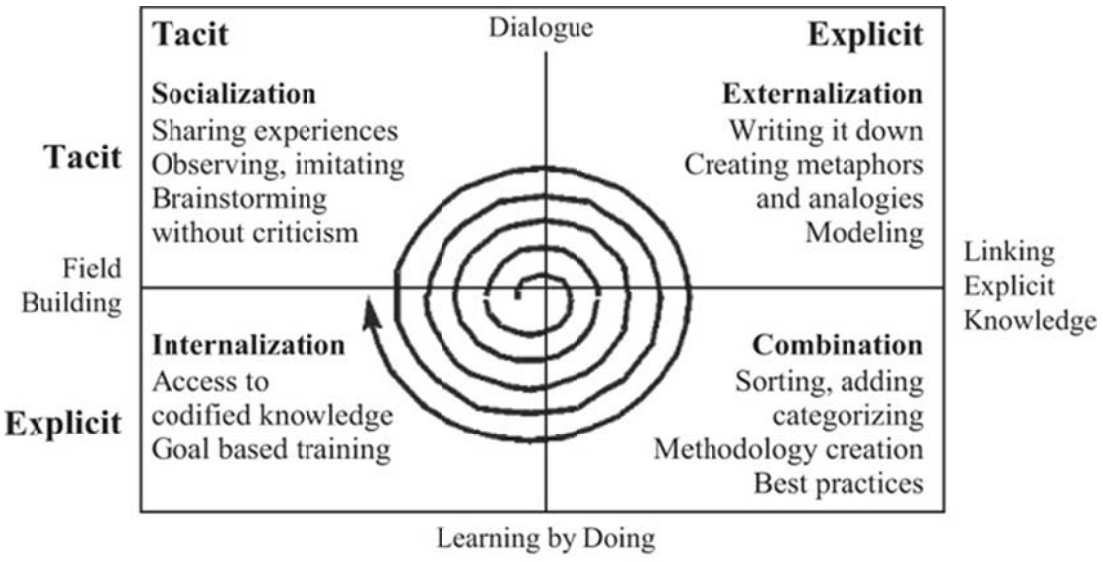

Figure 2.1: Knowledge conversion cycle (Nonaka & Takeuchi, 1995:71)

Dynamicity of knowledge refers to the continuous interaction between tacit and explicit knowledge and the fact that the socialisation phase facilitates the ability to dynamically respond to a person seeking knowledge. This is why, when considering knowledge sharing factors, it is important to consider knowledge sharing not from the point of view of information retrieval, but from the point of view of knowledge management.

2.2.3. Knowledge management misconceptions

The misconception about knowledge management is reflected in the fact that the concepts of knowledge and knowledge management are explained differently in the literature by various authors. As a result there are varying perceptions about what it is, what it entails and how it can be successfully applied. This is hugely impacted by the frequent lack of distinction between information and knowledge, and tacit and explicit knowledge; and the fact that technologies that have been developed to 'support' knowledge management turn out to facilitate information sharing (Mårtensson, 2000:213). As a result this adds to the confusion about what knowledge management is. This is why Mårtensson (ibid.) opted to study knowledge management from a theoretical perspective, looking at a review of the literature to answer questions related to its definition, its origins, its purpose, application and implications, the critical elements for its successful implementation; and to dispel some of the misconceptions that exist. Dattero, Galup and Hicks (2006:19) concur with the common problem of conflicting definitions, attributing this to the fact that knowledge management was adapted from other theoretical foundations and research streams. The study by Dattero *et al*. (2006) adapts the knowledge hierarchy developed by Davenport and Prusak (1998) to develop a new five-tier knowledge management hierarchy which incorporates new definitions for five different tiers of knowledge to serve as a tool that can be applied by managers involved in knowledge management activities. Baskerville, Long, Raven, Senn, Stewart and Storey (2000) also developed a framework for knowledge management practice, which emerged out of a study into the assumptions about knowledge management, some of which concur with the aforementioned misconceptions.

The diverse definitions of knowledge management are emphasised by Bill Gates when he points out that:

> *…knowledge management has become infused with almost any meaning somebody wants to associate with it…If reporters talk to a database company, they find that knowledge management is the newest thing in databases. If reporters talk to a groupware company, they find that knowledge management means the next generation of groupware (Gates, 1999:238).*

The over-differentiation of knowledge management has created a knock-on effect with regard to the provision of suitable IT, or technical solutions for managing knowledge. The arguments regarding what knowledge actually is would have a direct impact on the suitable technical solutions to effectively leverage the knowledge of an organisation. This is evident in the following definitions of knowledge management: "[a] discipline that systematically leverages content and expertise to provide innovation, responsiveness, competency, and efficiency" (Pohs, 2001:2); and "[k]nowledge management is nothing more than managing information flow; getting the right information to the people who need it so that they can act on it quickly" (Gates, 1999:239). Pohs' definition emphasises the need for personal expertise (tacit knowledge) to be used together with content (explicit knowledge), whereas Gates' definition focuses on the supply of information and facilitating access to that information. Gates has emphasised the need to supply what people need, when they need it, however, it is not explicit knowledge that enables one to take action. As Call (2005:20) puts it, "[k]nowledge management does not provide you with the answer to your problem rather it facilitates the learning of the answer". He further posits that knowledge management should enable learning and applying what is learned from the knowledge supplied in order to do one's job better. This emphasises the need for interaction between explicit and tacit knowledge. The effective leveraging of the knowledge of an organisation is directly impacted by the understanding of what constitutes knowledge management. This is why Pohs' (2001:2) definition of knowledge management, together with Alavi and Leidner's definition (2001:113) will be used to drive the research for this study.

2.3. Social and technical issues in knowledge management

The main concepts in knowledge management have been highlighted to establish a foundation for this research. This section, however, draws attention to the key issues affecting knowledge management as outlined in the literature. It is these issues that have determined the focus of this research, being people, processes and technology as key actors in a knowledge sharing network. If the issues outlined here are considered when introducing strategies to promote knowledge sharing, it is more likely to lead to sustained knowledge sharing for effective knowledge management.

Call (2005) cites Nesbitt's (2002) six steps for creating a knowledge management system. Besides establishing the goals of the system, based on the knowledge needs of the organisation, this framework emphasises people and processes as the key to its success. Call, however, adds "culture" as an additional fundamental issue for knowledge management to succeed. Culture has featured as a focus of research in knowledge management as argued by Mayfield (2008) and in studies that cite culture as a contributing factor (Beers *et al*., 1998:50; Annansingh, Eaglestone, Nunes & Wakefield, 2006:117).

Merriam Webster (2013) defines culture as “the integrated pattern of human knowledge, belief, and behaviour that depends upon the capacity for learning and transmitting knowledge to succeeding generations”. This definition alludes to the fact that prior knowledge and learning can have an impact on culture. For instance, a person’s prior knowledge about technology in general could potentially have a negative effect on their acceptance of this technology. Furthermore, when organisations take on elaborate knowledge management systems, without the proper needs analysis; this can impede its successful acceptance. Call (2005) is clear on the role of IT in knowledge management. Knowledge management is not information technology (IT), but IT is a small component of knowledge management. IT has been described as an enabler for knowledge management (McAdam & McCreedy, 1999:93). Even though the success of a knowledge management system does not rely solely on technology, and more on cultural issues, Call (2005:27) does agree that it can expand access and deliver knowledge in an easily accessible and usable format. This is why it has not been avoided, and its value has been emphasised in the literature. However, given that people have to use technology and processes are facilitated by technology, culture dictates suitable knowledge management technology. As Hackett (2000:42) puts it, ‘‘[knowledge management] software should be designed around the way people work.’’

Annansingh *et al*. (2006:117) indicate that the gap between theory and practice should be closed. The empirical research undertaken in this paper attempts to close this gap. If knowledge management activities are only sustainable by the continuous sharing of knowledge, then the factors that inhibit sharing, as discovered in this paper, can bridge the gap between what is theoretically considered as fundamental to knowledge management, and those factors that actually are. Annansingh *et al*. (2006) suggest that cultural, behavioural and organisational issues should be addressed before technical issues. It is, however, proposed that all these factors work together to form a network of issues that underpin successful knowledge management. This is noted by Armistead (1999:145) when he states that effective learning through knowledge management is achieved when people, processes and technology come together. These concepts are therefore considered together for the purpose of this research, as sociotechnical considerations for successful knowledge management.

2.4. Knowledge management in research

Even though issues pertaining to knowledge management have been revealed in the literature, empirical research into these issues is scarce. In fact, Alavi and Leidner (2001) reviewed knowledge management literature to identify areas of research. They argue that most knowledge management research is theoretically focused, and not much empirical work has been done. They suggest the following areas for empirical research where gaps exist:

knowledge creation, knowledge storage and retrieval, knowledge transfer, knowledge application and applying IT to knowledge management. These areas are in fact the processes of knowledge management which are important for creating and sustaining organisational memories. These knowledge management processes, as previously established, rely on the successful sharing of knowledge. The application of IT to knowledge management is also addressed in this research as a contributor to successful knowledge sharing, and this is why it is considered equally to human social factors as contributing to knowledge sharing factors for the purpose of this research.

Although there is a steady generation of knowledge management literature, it is evident that research into knowledge management has gained more focus theoretically rather than empirically. This gap, however, is not adequately addressed by existing empirical research. There is a lack of empirical research which fully encompasses people, processes and technology, which should be considered together for successful knowledge management, and which adequately addresses the dynamics of knowledge management postulated in the research. These findings validate the need for empirical research into the sociotechnical aspect of knowledge sharing for sustaining knowledge management. This research will therefore address this gap in the literature.

2.5. Knowledge sharing

2.5.1. A case for knowledge sharing

It has been established that to systematically leverage the knowledge within an organisation, knowledge management practices have to be in place to create and sustain organisational memory. However, to sustain knowledge management efforts, knowledge sharing needs to take place. This is why knowledge sharing is considered to be the main process (Hong *et al*., 2012:13093), and hence the focus of this research.

Knowledge sharing is the process of making one's knowledge available to others. This is possible by converting knowledge into a form that is easily accessible and easy to understand by others (Ipe, 2003:341). Sharing knowledge about expertise, skills and other relevant knowledge based on context and experience creates a level of organisational learning and knowledge which is more valuable than the knowledge that one individually owns (Choi *et al*., 2008:743) and enables the organisation to innovate (Argote & Ingram, 2000:156; Hewett & Watson, 2006:142).

From the studies conducted in respect of knowledge management, knowledge sharing in particular has become an area of concern (Choi *et al.*, 2008:743). This is due to the fact that knowledge management can only be sustained through the continuous process of sharing, which is dependent on people. Therefore the aim of preserving knowledge management

efforts is to create a culture of sharing in an organisation (Ahmad, Ives & Piccoli, 2000:232-233). In research conducted by Han and Voelpel (2005:61), they reported that motivations for knowledge sharing from the receiver's point of view include: time saving and productivity enhancement, access to approved solutions and answers to problems, and finding capable people that can provide help based on their experiences. This proves the invaluable fruits of knowledge sharing which is not always evident to the knowledge sharer. That is why, according to Luo (2009:262), the process of providing feedback on how one's knowledge sharing efforts have benefited others' work is essential for developing a positive attitude toward knowledge sharing. This is achieved if knowledge management processes are institutionalised, thereby enhancing its effectiveness and the sustained sharing of knowledge.

2.5.2. Knowledge sharing observations

A study into the acquisition, sharing and reuse of knowledge in the property management sector was employed by Fong and Lee (2009) in order to establish current knowledge management practices in this sector and to suggest improvements for the development of their knowledge management activities. The knowledge sharing aspect of their research attempted to determine the willingness to share, motivating and inhibiting factors, and frequency of sharing and the perceived usefulness of knowledge sharing methods. In fact, there are a wide range of factors in the context of knowledge sharing that are studied and discussed in the literature. These factors are studied particularly in terms of the extent and efficiency of knowledge sharing (Jiang & Li, 2009:359). A common theme within the knowledge sharing literature is that even though knowledge is shared to a certain extent, and low-level knowledge management activities are taking place, there is a lack of institutionalisation and failure to develop proper knowledge management strategies (Fong & Lee, 2009:312; Khalil, 2012:48). The factors that have been studied here, however, do not adequately encompass all aspects of knowledge sharing, considering the fact that today knowledge sharing is influenced by more than just human social issues. IT is used as a means to deliver knowledge management, adding an additional facet to knowledge sharing which should be considered in a study of this nature. Furthermore, knowledge sharing should be incorporated into the daily operations of an organisation through institutionalisation, which adds the process facet to knowledge sharing.

Due to the high reliance on people to initiate and sustain knowledge sharing, often the reluctance to share has impeded knowledge sharing initiatives. As a result, many organisations have had to implement reward schemes to encourage knowledge sharing. This initiative has led to increased focus in the literature on how to encourage knowledge sharing (De Pablos, Zhang & Zhou, 2013:307). Kankanhalli, Tan, and Wei (2005) actually characterised knowledge sharing as the provision of one's personal expertise and knowledge for economic reward or social benefits. However, research on this topic has led to divergent

results (De Pablos *et al*., 2013:311). The fact that the incentives that have been implemented in response to knowledge sharing problems have not proved to succeed in some cases begs the question as to whether knowledge management strategies have considered knowledge sharing dynamics from all perspectives, taking into account not only social factors such as willingness or perceived usefulness, but also the processes and technologies that facilitate knowledge sharing initiatives, thereby providing an all-encompassing sociotechnical view. This research will consider knowledge sharing from all perspectives to provide a comprehensive framework for implementing knowledge management strategies. By analysing knowledge sharing through the lens of ANT, the process of including an actor in a knowledge sharing actor-network addresses the motivations for academic staff to align their interests with that of the actor-network. This reveals their motivations to share their knowledge which would shed light on the issue of incentives.

It has also been established is that it is difficult to sustain knowledge sharing and to institutionalise knowledge management in an organisation. ANT enables the researcher to adequately address the issues around competing networks and the inscription of the actor-network. Competing networks influence the sustainability of knowledge sharing. This aspect of the theory enables one to determine the potential problems that could hinder the preservation of knowledge sharing efforts. Inscription as a concept of ANT allows the researcher to explore the institutionalisation of common practices and processes such that their continuous usage in the network of aligned interest will lead to the institutionalisation of knowledge sharing. The research harnessed the perceptions of academic staff on this issue.

2.6. Knowledge sharing challenges

2.6.1. Overview of studies on knowledge sharing challenges

The importance of knowledge sharing, and the reliance on people to sustain knowledge sharing, has led to knowledge sharing barriers receiving significant focus in the literature. Knowledge sharing is considered as the most difficult of the knowledge management activities (Ruggles, 1998).

Khalil (2012) studied knowledge sharing barriers at a higher education institution. His study, however, employed existing theories for soliciting perceptions of academic staff. His research, and many other studies into knowledge sharing barriers (Chiu, Hsu & Wang, 2006; Bock & Kim, 2002; Hendriks, 1999), looks at pre-existing perceived barriers. Even though knowledge sharing barriers have received focus in the academic context, these barriers were adopted from prior studies undertaken in the corporate context. Knowledge management was first adopted within business and later became an area of interest within academia. Prior research conducted on knowledge sharing factors was undertaken in business and those factors were subsequently tested in the academic environment. This research however

obtains the views of academics for their given domain by utilising a qualitative approach. In this way the results of the research pertain specifically to the academic context, as opposed to reapplying the business factors in the academic context.

Prior studies on the academic context have also inadequately addressed the sociotechnical nature of knowledge management. From a list of twenty-two knowledge sharing barriers, Khalil (2012) only addressed knowledge sharing enabling IT resources once, and its focus is on the lack of such resources (Khalil, 2012:50). Knowledge sharing factors have been considered from many perspectives, but not an all-encompassing perspective, which ANT is able to achieve. By using ANT as a theoretical lens, the researcher is also able to address issues around institutionalisation of knowledge sharing and sustainability of knowledge sharing. Prior studies have not achieved a similar analysis.

2.6.2. Limitations of studies on knowledge sharing challenges

Chuang and Hung (2009) not only acknowledge the importance of knowledge sharing as an enabler of knowledge flows, but they also acknowledge the plethora of research into factors influencing knowledge sharing. This is why they conduct a theoretical study, attempting to distil the factors emerging from this research. The factors identified by studies on knowledge sharing within organisations and virtual communities were divergent (Chuang & Hung, 2009:144). Chuang and Hung (ibid.) attempted to combine the results from these studies to deliver a comprehensive framework which could be useful in stimulating knowledge sharing within organisations. These findings demonstrate the shortcomings of prior studies. Given the divergent findings on knowledge sharing challenges, there is the need for a systematic means to harness these challenges into a comprehensive framework which takes into account people, processes and technology. This research has attempted to systematically represent knowledge sharing challenges using an underpinning theory which provides a foundation for developing a comprehensive framework, thereby establishing a normative approach to introduce strategies to support knowledge sharing.

2.7. Research theories employed in knowledge sharing

2.7.1. Overview of theories used to study knowledge sharing

Not only are the factors reported by the literature divergent, the theories employed to help explain knowledge sharing dynamics and behaviour are also contradictory. The theory of reasoned action (TRA) (Ajzen & Fishbein, 1980), the theory of planned behaviour [*sic*] (TPB) (Ajzen, 1985, 1989), social exchange theory (Blau, 1964; Kankanhalli *et al*., 2005), social capital theory (Ghoshal & Nahapiet, 1998); and the research by Chiu *et al*. (2006) which combines the social cognitive theory with the social capital theory used by Ghoshal and Nahapiet (1998) are some of the theories employed in the study of factors influencing

knowledge sharing. These factors are mostly of a social nature, although some of them look at the cost and benefit factors. Chiu *et al*. (2006) felt that even though knowledge sharing is determined by human behaviour and that the social cognitive theory defines human behaviour, due to the fact that their research focused on virtual communities, issues related to social networks could be addressed by the social capital theory, as the social cognitive theory would not adequately address the components within a social network and their influence on knowledge sharing. These theories, however, do not consider the sociotechnical nature of knowledge sharing. Neither does the synthesis of the literature performed by Chuang and Hung (2009), as they, through their review of the literature, were able to identify four dimensions to knowledge sharing and ten factors. The dimensions included cost, extrinsic benefits, intrinsic benefits and contextual factors. The only factor within these dimensions that is somewhat related to technical aspects of knowledge sharing is codification – which in their research is only considered in terms of the effort required for codification of knowledge. As usual, however, their study is limited in its generalizability as their review was conducted on a limited number of Management Information Systems journals.

2.7.2. Actor-network theory in knowledge sharing studies

Studies that utilise ANT for explaining knowledge sharing dynamics include one by Chae, Koch, Paradice and Van Huy (2005), which studied the knowledge sharing activities within communities of practice and networks of practice and attempted to determine the role that information and communications technology (ICT) play within these networks. Their point of departure was to look at three theories, namely the social-practice perspective, social network theory and actor network theory. They postulated that the dynamics of the communities and networks of practice could not adequately be studied by applying only one of the theories. This is because their review of the literature led them to research questions which embodied several different perspectives of knowledge sharing, including organisational and social dynamics related specifically to communities and networks of practice, which are more suitably addressed by the social-practice perspective and social network theory. They, however, recognise an overlap in the respective theories and utilise ANT together with the aforementioned theories to understand some of the social, organisational and technical perspectives. Their initial research into the literature around the role of ICT in knowledge sharing generates conflicting views. There are studies that either favour or disfavour the use of technology to support knowledge management activities (Chae *et al*., 2005:65). However their empirical research proved that ICT on its own cannot determine the success of knowledge management activities but that it does have a strong positive influence on its formation and maintenance (Chae *et al*., 2005:70). The role of ICT,

as identified in their research is that of connecting people and maintaining the network of participants in knowledge sharing (Chae *et al*., 2005:70).

2.7.3. Limitations of existing studies

The current literature that has employed theories in the study of knowledge sharing factors has focused mainly on social factors. Not only is there little focus on sociotechnical factors affecting knowledge sharing, but there are none that utilise ANT and none from the academic institutions' perspective. This research is therefore relevant particularly where it presents a novel approach to studying knowledge sharing factors in the academic domain. The study by Chae *et al*. (ibid.) has emphasised the need for a sociotechnical focus which considers technology as equally important to people in affecting knowledge sharing.

Due to the fact that this research considered people, processes and technology in the effective leveraging of organisational knowledge through knowledge sharing activities, ANT was used as a lens through which to understand and interpret the sociotechnical nature of knowledge sharing, due to its all-encompassing view of these dynamics. ANT, which focuses on social, organisational and technical perspectives; has been used to underpin the research as a theoretical lens for analysing the inhibiting factors to knowledge sharing to suggest customised strategies for the academic context.

2.8. Knowledge sharing factors

Even though some studies into knowledge sharing do not necessarily identify influencing factors, they do however consider the complexities of knowledge sharing systems and processes, such as the study by Davis, Subrahmanian and Westerberg (2005). By evaluating the current practices of a multinational company, they were able to gain insight into the complexities and constraints of a knowledge management system to offer guidelines for proper design of knowledge sharing systems and processes.

A gap in the research exists where analysis of factors and guidelines for proper design and implementation come together to provide a comprehensive solution. It is the researcher's opinion that reporting on factors influencing knowledge sharing merely alerts the relevant parties to the potential inhibiting or enabling factors. Evaluating current practices and reporting on gaps, particularly in a case study scenario such as the one undertaken by Davis *et al.* (2005) is helpful for the organisation of study, but hardly generalizable to, say, academia. Other studies where the focus is on academic institutions do not adequately address the sociotechnical nature of knowledge sharing.

2.8.1. Human and social factors

Erickson, Kellogg and Thomas (2001) raise concerns about the perception that knowledge management is merely about codification of explicit knowledge through documents and databases and that it is merely about capturing, organising and retrieving the coded knowledge (Erickson *et al*., 2001:863). If knowledge management were that simple, there would be no need to study knowledge sharing from the human perspective. This is why they studied the cognitive and social factors in knowledge management and recommended practical solutions to designing socially-informed knowledge management systems. They make a point of not generating a unified framework based on the literature (Erickson *et al*., 2001:864), and the researcher agrees with this approach, particularly for the academic context. Cranfield and Taylor (2008:98) in particular point out that the distinctive nature of academics impact on the culture of the institution, which influences those factors which contribute to successful implementation of knowledge management. They postulate that there are both an academic and administrative culture and that these cultures could have subcultures for each discipline or function (2008:98).

Through the theoretical study of the knowledge management domain by Erickson *et al*. (2001) gaps in knowledge management research have emerged in as far as social and human factors are concerned. This perhaps rings true with what Choi and Sung (2012:11) reported in their study: that “mere possession of domain-relevant knowledge is not enough for teams to become creative. Instead, to gain creative benefits, team members must actively apply and utilise their knowledge”. Erickson *et al*., (2001:864) clearly point out that “knowledge is bound up with human cognition, and it is created, used and disseminated in ways that are inextricably entwined with the social milieu”. They argue that knowledge management must take both human and social factors into account. Panteli and Sockalingam (2005) looked at trust and conflict as ‘central’ issues to knowledge sharing, particularly in virtual inter-organisational arrangements or virtual ‘networks’ of sharing. Their choice of issues hinges on the argument that humans are central to knowledge sharing. Their focus is hardly an exhaustive list of factors to be considered, even though they have adequately argued its vitality.

2.8.2. Sociotechnical factors

Knowledge sharing not only requires human involvement, but also technical mechanisms which facilitate storage and easy retrieval (Kim & Lee, 2006:370–371) of explicit knowledge, and communication (Wissensmanagement forum, 2003:21) for sharing of tacit knowledge. Kim and Lee (2006) therefore studied not only organisational culture and structure, but also IT as factors impacting knowledge sharing within public and private organisations. The results of their research however, featured all of the IT factors as contributing more

significantly to knowledge sharing, including IT applications and user-friendly IT systems. The study focused on organisations that had established knowledge management systems.

This research considers all the perspectives outlined in the literature, and does not take for granted the unique nature of the academic environment. This is why a study which is able to evaluate knowledge sharing from a human, social, technical and process perspective is needed, even more so a study which engages with the people that will be affected by the strategies which will be recommended for the successful implementation of knowledge sharing activities for the successful creation and sustaining of an organisational memory. It could be suggested that a study of this nature would be 'reinventing the wheel', but as previously argued, the success of knowledge management initiatives is strongly influenced by knowledge sharing and the success of knowledge sharing is contingent on the environment in which it is undertaken. This environment is unique to each organisation based on its culture. Knowledge is highly contextual and is universally accepted within an organisation, which means that knowledge is unique to a specific context. It has also been argued in section 2.2 that true knowledge management is not information sharing but a sharing of tacit knowledge, which is highly contingent on people and processes and the technologies employed to expand accessibility. Therefore this research has offered a distinctive solution for the academic context which has not been investigated in this capacity before.

Hendriks (1999) studied the influence of ICT on the motivation for knowledge sharing. It emerged from his study that often ICT is used to improve knowledge sharing in an environment where people are not motivated to share knowledge. If this is the case, they will likely not be motivated to use the facilitating tools to share knowledge (Hendriks, 1999:91). Rather, ICT should be matched to the motivations for knowledge sharing, as this will determine the role of ICT in knowledge sharing (Hendriks, 1999:99). Bhatt (2001:74) states that knowledge management can be carried out in an informal manner, but to sustain the competitive advantage leveraged by knowledge management, an organisation would have to ensure that their technologies and social system fit together. Furthermore, too much focus is put on either people or technologies – rather, researchers should look at the interaction of the two (Bhatt, 2001:75).

Chen and Lin (2009) recognise the importance of the sociotechnical nature of knowledge sharing, and emphasise the need to assimilate the social factors of knowledge sharing into the technical knowledge management platforms, arguing that even though the technical aspects are important for effective knowledge sharing; it is the social factors which are critical for its success. Having said that, they do not omit the technical aspects from their research, instead they attempt to draw on the social factors such as self-efficacy, collective cognitive

responsibility, enjoyment in helping others, individual outcome expectations and identification-based trust. These have been found to have significant influence on motivations for knowledge sharing in studies conducted by Compeau and Higgins (1995), Bandura (1997), Scardamalia (2002), Kankanhalli *et al*. (2005), Chiu *et al*. (2006), and Bishop (2007); and determine how a technical knowledge management system can embody these social factors.

Aspects of the literature reviewed, in as far as those factors that inhibit or impact on knowledge sharing, have been incorporated into the research to tease out the investigation. These aspects of the literature constitute an historical analysis and have been used together with a contextual analysis of the academic domain. ANT was utilised in conjunction with the historical and contextual analysis to trace the development of the explicit sociotechnical conditions for knowledge sharing. Knowledge sharing factors in the literature were used to develop a conceptual framework, illustrated in Figure 3.1, to guide the research and the results were captured into a general framework, Figure 5.1, which is a refinement of the original conceptual framework.

2.9. Knowledge management in higher education

2.9.1. Current observations in higher education

Knowledge management is still in its infancy as an area of research interest within academia (McAdam & McCreedy, 1999:91). Current foci on knowledge management in education include incorporating knowledge management tools such as Wikis, podcasting and other Web 2.0 tools in teaching and learning as well as the use of various educational platforms such as e-learning to facilitate new teaching pedagogies where learning becomes student-centred rather than teacher-centred (Olfman *et al.*, 2005; Ractham & Zhang, 2006; Järvelä, Laru & Näykki, 2011; Biasutti & El-Deghaidy, 2012; Clarke, Cornell, Eales-Reynolds, Grech & Gillham, 2012; Dobozy, 2012). Observations in respect of knowledge management in higher education reveal that it is not a high priority within higher education to the point where knowledge sharing processes are integrated into the daily routines (Biasutti & El-Deghaidy, 2012:863), more particularly by academics. Universities have been proactive in creating knowledge repositories where access to explicit and public information is concerned (Rowley, 2000:331), but if we consider Bhatt's view on how knowledge is acquired, that is as "[an] organized combination of data, assimilated with a set of rules, procedures, and operations learnt through experience and practice." (2001:70), these are not knowledge management activities, but rather constitute the dissemination of information. Furthermore, even though there has been some research into the knowledge management practices at higher education institutions in terms of the extent to which knowledge is shared, how it is shared and whether there is a willingness to share; as an emerging discipline, there should

be greater focus on making recommendations for its implementation so that these institutions can harness its full potential.

2.9.2. Knowledge management applications in higher education

Knowledge management in higher education is a diversified field, including models that have been developed for teaching and learning (Olfman *et al.*, 2005; Ractham & Zhang, 2006; Järvelä *et al*., 2011; Biasutti & El-Deghaidy, 2012; Chen, Yeh & Yeh, 2012; Clarke *et al*., 2012; Dobozy, 2012), supporting distance learning (Kimble & Ubon, 2002), knowledge sharing among academics (Daud & Sohail, 2009; Khalil, 2012), and knowledge transfer between higher education institutions and industry (Andersson, Jones-Evans, Klofsten & Pandya, 1999; Bukirwa, Kayiki & Magara, 2011), to name a few. Malik (2005:120) reports on some of the growing trends within academia that has led to the need for knowledge management within higher education institutions, including: growth in learner-centred knowledge and action learning, moving from closed to open knowledge systems, and a growing focus on work-related learning. This is why some of the foci within the context of knowledge management in higher education have been on teaching and learning and links between academia and industry.

Chen, Cheng and Huang (2009) measure the knowledge management performance of a technology university in order to make comparisons to the knowledge management performance of its competitors. They attempt to measure knowledge management performance by utilising the analytical network process together with the four perspectives of the balanced scorecard (Chen *et al*., 2009:8449), with the intention of informing the institution where they should improve on knowledge management. Their stance, however, is not to measure the internal performance of knowledge management, but the performance of the institution in relation to its competitors (Chen *et al*., 2009:8449). Their research perhaps builds on the notion that higher education institutions are increasingly becoming pressured to operate like a business (Malik, 2005:118; Sulisworo, 2012:113). As a result, they are also exposed to market pressures, which allude to the idea that innovation and competition should be placed high on their agenda.

That knowledge management, as a tool for innovation, has become important in the academic domain is evidence that its benefits have been realised for academia. However, the institutionalisation of knowledge management is not enough to sustain knowledge management activities. It has been argued that without knowledge sharing, knowledge management efforts will not succeed. Therefore, by establishing a normative approach to introduce strategies to support knowledge sharing, based on the results of this research, an appropriate strategy for knowledge management can be realised in higher education institutions.

2.10. The need for knowledge management in higher education

2.10.1. Knowledge management for the higher education context

Even though it is proposed that knowledge management might offer higher education institutions the understanding of how knowledge and information might improve their organisations, the knowledge management that originated from the business context cannot simply be reapplied in the educational context (Sulisworo, 2012:113). Instead, Sulisworo suggests that higher education institutions should have their own framework in place for knowledge management, which should encompass the organisational culture, a store of experiences, insights, values and the IT infrastructure (Sulisworo, 2012:115). In the context of higher education, knowledge management activities should encompass those processes associated with harnessing information and knowledge generated by staff and academics working in various departments and faculties, as well as other institutions and organisations (Chong, Ismail & Ramachandran, 2009:205). Furthermore, higher education institutions must consciously and explicitly manage their knowledge management processes (Rowley, 2000:329; Sulisworo, 2012:115). This implies that for knowledge management to be successfully implemented at higher education institutions, it must be institutionalised. Higher education institutions do not merely provide knowledge to students, but there needs to be generation and management of existing knowledge for future use and reference by other staff and academics, leading to improved performance, particularly through the ability to adapt, innovate and improve efficiency (Malik, 2005:118).

2.10.2. Knowledge management for higher education academics

Chen and Lin (2009:2) point out that, educational institutions generate operational knowledge in a similar manner to that of businesses, including operational knowledge generated through the processes of teaching and learning. Aczel *et al.* (2004:740), explain that academics want to know what their colleagues are doing, and what methods and approaches they are using. In fact, they want the opportunity to discuss ideas with their colleagues (Chen & Lin, 2009:2). A systematic approach to supplying relevant information and to make communication with relevant persons for the exchange of tacit knowledge possible is required for access to quality resources (Ravitz & Hoadley, 2005:958). Even though traditionally research was considered a way of creating new knowledge within academia (Malik, 2005:120), this has changed. Rowley (2000:329-330) indicates that higher education institutions are to a certain extent maintaining a certain level of knowledge management activities, including collaborative research and publicly disseminated research (some of which is publicly owned and not maintained by an individual institution), maintaining knowledge repositories in the form of corporate financial databases, marketing databases, library databases but lack databases that support the operational activities of an academic institution (ibid.). In other words, there is a lack of knowledge to support academic and non-academic action and

decision making. She further posits that universities do not lack data in knowledge repositories, but rather a combination of explicit and tacit knowledge, that is an integrated knowledge repository or 'combined wisdom' of the institution, whether academic or non-academic. Furthermore, there is a lack of explicit distinction of the knowledge requirements of various segments within higher education (ibid.).

The motivation for knowledge sharing in academia is revealed through this literature. In a similar manner that businesses generate knowledge through their daily operations, higher education academics need access to operational knowledge. The literature expresses this need for access to operational knowledge within academia, but does not offer a framework for academia nor do they offer strategies that encompass people, processes and technology. Even though research generates new knowledge and academics have access to these forms of knowledge, they require knowledge which enables them to do their jobs efficiently and effectively, that is operational knowledge. It has also been established that frameworks developed for the business context cannot be reapplied to the academic context, due to the unique nature of knowledge within the respective domains. This is why a framework specifically for the academic context must be developed which not only considers institutionalisation, but also will encourage the continued sharing of knowledge, given that institutionalisation itself cannot guarantee the sustainability of knowledge sharing.

2.11. Current knowledge management practice in higher education

2.11.1. Overview of studies on knowledge management practice in higher education

There are not many studies conducted into knowledge management practice in higher education, but some of the more recent studies include Nakamori, Tian and Wierzbicki (2009), Arntzen *et al.* (2009), Daud and Sohail (2009), Nodine and Petrides (2002), Khalil (2012), Wang and Wedman (2005), Annansingh, Elbeltagi and Garcia (2011) and Eftekharzade and Mohammadi (2011). These studies, however, affirm the need for the empirical research undertaken in this paper, and are therefore outlined below in support for the motivation of this research.

The research by Arntzen *et al*. (2009) explains the process that led to a higher education institution in Bangkok implementing a knowledge management system. The higher education board of Thailand decided that one of the key performance indicators for measuring the quality of Thai universities would be associated with the implementation of a knowledge management system. The University of Bangkok undertook the challenge and Arntzen *et al*. (ibid.) traced the development of the project. What emerged from their study is that in the context of academia, knowledge sharing mechanisms are the biggest concern when it comes to knowledge management processes (Arntzen *et al*., 2009:129). Knowledge sharing

processes are not integrated into daily routines. In fact there is constant duplication of work among academics in particular, for example, academics recreate existing teaching materials. Arntzen *et al*. (2009:129) argue that this is time that is wasted which could otherwise be spent with students or doing research, and has led to inconsistencies in lectures, especially when newly-appointed academics recreate their own lectures. Their research is comprehensive, taking into account the relationships between people, processes and technology across the institution, including academics, students and administration, as well as ties with external parties such as industry and partners. Their intention was to generate a framework for higher education institutions which focuses not only on the human strategy of knowledge management, but also the technical strategy (Arntzen *et al*., 2009:130). They recognised the need to match the technology to the knowledge sharing needs, citing tracking resources development and consumption, fostering information and knowledge flow, collaboration and facilitation of knowledge sharing and reuse as key benefits for using technology (Arntzen *et al*., 2009:133). Even though the study encompasses the knowledge management system of the university as a whole, they do report that knowledge sharing between faculty members was the most important initiative of the project (Arntzen *et al*., 2009:135).

Nakamori *et al*. (2009) empirically studied the obstacles to knowledge creation and management and studied the knowledge creation processes that need more attention and support at universities and research institutes. Khalil (2012) empirically studied the knowledge sharing barriers and the extent to which these barriers impact on the effectiveness of knowledge sharing at a higher education institution. His research looked to existing literature for perceived knowledge sharing barriers in theoretical and empirical research. Both studies, however, only considered sharing of research-related knowledge. Arntzen *et al*. (2009) have considered not only research-related knowledge, but also the knowledge embedded in educational and administrative processes (Arntzen *et al*., 2009:129).

Eftekharzade and Mohammadi (2011) studied the readiness of a university for knowledge management by looking at their current situation in respect of human resources, organisational structure, and culture and IT and present a knowledge management strategy based on their findings. Wang and Wedman (2005) propose a knowledge repository approach to address two challenges identified in organisations in as far as knowledge management is concerned. The first is to protect the knowledge resources of the organisation, particularly due to the high staff turnover rate in education (Wang & Wedman, 2005:119). The second is to make the tacit knowledge that resides within the minds of individuals within the organisation explicit in order to share it with others within the organisation (Wang & Wedman, 2005:120). Annansingh *et al.* (2011), on the other hand,

proposed a social networking approach to knowledge management in higher education, which was met with reluctance by higher education academic managers. They (ibid.) suggested that these managers were either not willing to share knowledge or were not aware of the full potential of the technology (Annansingh *et al*., 2011:269).

Daud and Sohail (2009) studied knowledge sharing factors in public and private higher education institutions. Based on the measures for knowledge sharing identified through a literature review, empirical observations revealed contrasting findings between private and public universities. Those measures which had a significant influence on knowledge sharing in public universities did not necessarily have the same influence in private universities, signifying that results from the literature do not necessarily apply to every university. Further research could either dispute or validate current findings and perceptions, especially because the research into knowledge sharing in higher education institutions is not extensive. Daud and Sohail (2009:126) confirm this in their paper, indicating that the bulk of knowledge sharing studies are based on knowledge sharing between employees within organisations. This is also affirmed by the fact that their identification of knowledge sharing measures were taken from studies related to, for example, public service organisations and the national car industry. The author is of the opinion that the dynamics of the corporate world and public service sector may not necessarily apply to the academic context. Therefore further empirical research into knowledge sharing within academia is needed.

2.11.2. Shortcomings in current higher education knowledge management studies

Even though studies in the fields of knowledge management and knowledge sharing in higher education have been undertaken, as outlined in the above studies, each study presents a shortcoming which was addressed by this research. Those studies which utilise existing factors from the business domain have not considered the fact that knowledge sharing is highly contingent on the environment in which knowledge is shared. The research problem is a social phenomenon i.e., it is socially constructed and as such can be better understood and interpreted through a social theory and interpretivism paradigm. Therefore, using ANT as a theoretical lens made it easier to study knowledge sharing factors for the academic domain. This is why this research was qualitative in nature, exploring the views of the academics and permitting the researcher to assign meanings to the views of the respondents, which is not possible in quantitative studies. This means that knowledge sharing factors in the specific academic context were discovered, as opposed to reapplying knowledge sharing factors from other domains.

This research considered what the literature reports as knowledge sharing factors, but through the lens of ANT which enabled the analysis to take into account all related views of the knowledge sharing network. However, the interviews conducted offered a refinement of

the original framework for the academic context. The other studies have looked at offering specific knowledge management solutions and tested these in the academic context, but solutions or recommendations cannot be offered without a needs analysis of the context, which was achieved through this research. Furthermore, the research by Arntzen *et al*. (ibid.) considers people, process and technology to develop a framework for higher education, but this research has offered a novel way of developing a framework by looking at the knowledge sharing network strength for the sustainability of knowledge sharing and the strategies for inclusion of an actor into the knowledge sharing actor-network, making this framework a unique and comprehensive one.

2.12. The role of technology in knowledge management

Knowledge management is the combination of people, processes and technology that together facilitate information sharing more robustly (Sulisworo, 2012:113). Knowledge sharing is facilitated by an information system (IS) (Hong *et al.*, 2012:13094). An IS consists of components; such as hardware, software, people, telecommunications and procedures; that work together to process data into information (Jones & Oz, 2008:14). The reason an IS can improve knowledge sharing is because it can remove sharing barriers related to geographical distance and improve accessibility (Hong *et al.*, 2012:13094). The implementation of knowledge sharing technologies has only recently matured to the extent that it is studied in terms of its barriers to knowledge sharing (Goody & Hall, 2007:182). It is therefore a fairly new area of research, in particular to the academic, sociotechnical context. Backhouse and Silva (1999:2) emphasise the stabilising benefits of institutionalisation. In their research they were referring to ISs in general, therefore its applicability can be extended to a knowledge management context. However, once implemented, continuance of its use depends on the willingness of users to share and use knowledge (Holsapple & Singh, 2001; Hansali, 2002). Therefore knowledge sharing factors are indeed sociotechnical.

2.12.1. Technologies deployed in higher education for knowledge processing

The technologies that have been deployed in higher education in order to enhance knowledge processing capabilities include IT applications such as ERPs, portals, data warehouses, course management systems and knowledge management tools (Khalil, 2012:47). However, most of these technologies, particularly course management systems, are not applied to the full potential for knowledge management. Most course management systems, for example, are used for low-level activities, such as posting course updates. Data warehouses may harness some potentially useful information, but cannot be considered as a knowledge-generating tool. According to Beers *et al.* (1998:51), knowledge management is better applied when using technology together with organisation. However, we should not see technology as the central theme of knowledge management. Not all knowledge

management initiatives involve the implementation of IT, but many knowledge management activities do rely on IT as a key enabler (Alavi & Leidner, 2001:114).

2.12.2. Selecting appropriate technologies for knowledge sharing

The selection of the appropriate technologies should suit the organisational knowledge management goals and the kind of knowledge that will achieve these goals. Furthermore, in order to determine the key areas for knowledge management, one should look to the knowledge-intensive processes which are critical to the success of a company or organisation (Wissensmanagement forum, 2003:35). The aim should be to enable access to stored information and sharing on this information. According to Andrusky and Chopra-Charron (2009:1), both explicit and tacit forms of knowledge must be captured and shared for information to become knowledge. The kind of knowledge that would be created and transferred would influence the kind of IT tools that facilitate knowledge management.

Goh (2002:27) suggests that tacit knowledge is more suitably transferred via interpersonal methods which often require face-to-face interaction. IT, however, has made interpersonal communication possible, through the use of personal intranets. On the other hand, explicit knowledge can be recorded in structured formats and is facilitated by ISs and knowledge bases or knowledge portals. Essentially, the transfer of both forms of knowledge is now facilitated by IT to extend sharing beyond geographical boundaries. Carroll, Choo, Dunlap, Isenhour, Kerr, MacLean and Rosson (2003) propose the following three essential features of a knowledge sharing system: firstly, it should be easy to use, secondly it should provide an abundance of tools, including tools for interaction, and thirdly it should help its users to locate knowledge which they require for professional application and should encourage further face-to-face interaction between its users. Aczel *et al.* (2004) conclude their research by postulating that the biggest incentive for sharing knowledge lies in the system which facilitates such sharing. In other words, the system, if suitably designed with its users in mind, will inherently encourage users to access and deposit knowledge.

This research has considered that knowledge management is about the interaction between explicit and tacit knowledge, and the technologies which facilitate knowledge management must be suitable to ensure that these forms of knowledge interact to create new knowledge. It has been established that the suitability of technologies for knowledge sharing can influence the sustainability of knowledge sharing, as technologies that are not easy to use or do not deliver the knowledge that people are looking for, can impede on knowledge sharing initiatives. This means that technology, as an actor in a knowledge sharing actor-network, can betray the actor-network if it does not fulfil the role which has been inscribed in it. Therefore, this research offers an alternative view to IT as an enabler of knowledge sharing. The suitability of technology has been studied from the perspective of hindering the actor-

network strength if it does not offer people what they are looking for, which could lead the academic actors to betray the actor-network. This research reported the views of the academic actors as far as what would constitute enabling technologies for knowledge sharing to ensure the strength of the knowledge sharing actor-network.

2.12.3. Affordances of technology for knowledge sharing

IT has contributed significantly to the speed at which knowledge can be accessed within the organisation and at which information is processed (Liao, 2003:158). Knowledge transfer today relies on IT for the creation and dissemination of knowledge within the organisation (Liao, 2003:158, 159). The IT deployed in general and in higher education institutions for supporting knowledge management activities have been outlined. Some technologies have been identified as low-level information sharing tools which do not support knowledge management activities, particularly knowledge sharing. If technologies do not adequately support the sharing of explicit and tacit knowledge, they will impede knowledge management strategies. That is why technology is considered as pertinent to this research as a contributing factor to knowledge sharing and considered to be as important as people and processes in this research's context. As mentioned, the selection of the appropriate technologies should suit the organisational knowledge management goals and the kind of knowledge that will achieve these goals. If the technology employed is not suited to knowledge sharing needs and types, it will have a significant negative impact on knowledge sharing initiatives.

2.12.4. Technology in knowledge management research

There are many studies that evaluate suitable knowledge management technologies, including the studies conducted by Liao (2003) and Sulisworo (2012), which identifies several knowledge management technologies and knowledge-based systems. Other studies consider knowledge management technologies as one of a number of barriers to knowledge sharing in higher education (Khalil, 2012). While much of the literature focuses on the technical issues at its inception and much of the core focus of knowledge sharing is on social factors (Alavi, Kayworth, & Leidner, 2006:193), there is little empirical research into a collective consideration of both the social and technical viewpoints (Choi *et al.*, 2008:743), although the need for such research is expressed by Daud and Sohail (2009:130). In as far as technology for knowledge management is concerned, this research attempted to change the focus from technocentric to sociotechnical, and, in doing so, placed equal emphasis on technology as on social factors.

2.13. Summary

The review of the literature has highlighted knowledge management and knowledge sharing as significant in enabling improved organisational performance, since access to the right knowledge at the right time can improve organisational effectiveness and efficiency. Furthermore, knowledge management enables organisational learning and continuous sharing and exchange of knowledge, which is important for innovation in an academic environment. Key concepts of knowledge management are discussed to achieve a greater understanding of what it entails. This lays an important foundation for why knowledge management has received much focus in the literature, and why it is necessary for higher education academics to share their knowledge. In particular, it establishes the importance of knowledge sharing as a way of sustaining the flow of knowledge within the organisation to achieve organisational effectiveness and efficiency. People, processes and technology are identified as key actors in a knowledge sharing network. Therefore, they are considered as important when introducing strategies to promote knowledge sharing. There is a lack of empirical research which fully encompasses people, processes and technology, which should be considered together for successful knowledge sharing.

The review of knowledge sharing challenges reveal that social factors have received a greater focus in the literature than technical or process factors. It has also been found that if people, processes and technology are to facilitate knowledge sharing, then knowledge sharing factors should be studied from a sociotechnical perspective. Much of the literature focuses on knowledge sharing factors in the business context and many of the factors in the higher education context have been adopted from the business context. There is a need for research that considers the higher education academics' point of view on what constitutes the factors affecting knowledge sharing in their context. Higher education institutions should have their own framework in place for knowledge management, which should encompass their organisational culture. This will address the gaps identified in the literature for the higher education context. A conceptual framework that reveals the factors gleaned from the literature is illustrated in Figure 3.1 which will be used as an historical analysis and will be compared to the contextual analysis of the institution under study. The following chapter will discuss the theoretical underpinning of the research, which has been used to guide the development of the conceptual framework. Chapter 3 makes a case for the selection of the actor-network theory to underpin the research and provides an explanation of the theory. It also provides an explanation for the development of the conceptual framework which will be used to guide the collection, analysis and interpretation of the data.

CHAPTER 3: UNDERPINNING THEORY

3.1. Background

Information technology is able to efficiently process data into information. However, it is human interaction that adds the meaning to information to create knowledge. Humans are slow at transforming data into usable knowledge, which is why various technologies and subsystems are better suited to the task (Bhatt, 2001:68). As noted by Armistead (1999:145), however, there must be interaction between technology, people and processes for knowledge management to be successful. This is why this research will consider people, processes and technology as actors in the knowledge sharing actor-network. Within the academic domain, and particularly in sociotechnical studies, ANT has been utilised as a theoretical lens for analysing interactions between technology and humans (Goody & Hall, 2007:182). Knowledge sharing issues in organisations not only relate to technological but also behavioural factors (Liao, 2003:161). Furthermore technical and social issues have proved to influence the institutionalisation, implementation and operation of technology-based systems (Kling & Scacchi, 1982; Goody & Hall, 2007:183). Sarker, Sarker and Sidorova (2006:53) provide an adequate motivation for using ANT as a theoretical lens for studies in which technology plays a critical role because ANT does not exclude nonhuman actors from analysis, thereby allowing the analysis to explicitly reveal the enabling or restrictive role that IT plays in sociotechnical processes.

The choice of utilising ANT as a means to understand and interpret knowledge sharing factors is affirmed by Goody and Hall (2007). They recognise the need for a knowledge management strategy that informs knowledge management practitioners of practical ways to address the perceived issues of ‘culture’ as an inhibitor to knowledge sharing. They argue that culture is hardly a reason as to why people do not share knowledge – how would knowledge management practitioners utilise this information to forward their knowledge management strategies? Rather, if they are able to understand the respective roles that humans, organisational structures and technology play in the knowledge sharing network and their relationships, they could recommend practical strategies for addressing the ‘power’ issues presented by these actors in the actor-network. By utilising ANT as a lens to understand and interpret knowledge sharing behaviours, researchers are able to understand possible confusions about what knowledge management is about (Goody & Hall, 2007:185). Essentially, the idea should be to move away from the traditional strategies proposed by knowledge management literature and offer a new perspective to knowledge sharing dynamics by recommending strategies which are aimed at strengthening relationships within a knowledge sharing network (Goody & Hall, 2007:187).

3.2. Overview of ANT

The actor-network theory (ANT) was developed in the 1980s by Callon and Latour (Goody & Hall, 2007:184) and is applied particularly in the research of technologies. ANT regards both humans and nonhumans, such as technology, documents, concepts (like knowledge management), data repositories, or similar, as actors (Goody & Hall, 2007:185). The reason ANT also considers nonhuman actors is to examine the enabling or restrictive role that nonhuman actors play in a particular context (Sarker *et al.*, 2006:53). It examines the shifting relationships between the actors (or members) of a network. These shifting relationships are examined in respect of the four moments of translation. 'Translation' in the context of ANT is the alignment of interests of the actors in a network with that of a focal actor. The four moments of translation include: p*roblematization*, *interessement*, *enrollment* and *mobilization [sic]* (Sarker *et al.*, 2006:54). They address the formation, growth and stability of a network of aligned interests. Successful network formation is dependent on the successful implementation of the four moments of translation. The four moments of translation involve the rallying of support from all the actors in a network and maintenance of alignment with the obligatory passage point (OPP) (Sarker *et al.*, 2006). The OPP is "[a] situation that has to occur for all of the actors to be able to achieve their interests, as defined by the focal actor" (Sarker *et al.*, 2006:56).

The formation of an actor-network is initiated by a *focal actor*. An actor is defined as "[a]ny element which bends space around itself, makes other elements dependent upon itself and translates their will into the language of its own" (Callon & Latour, 1981:286), which as previously mentioned may be human or nonhuman. A focal actor is regarded as the key actor in driving the process for creating a network by forming alliances with other actors. The role of actors in a network are defined and understood in relation to other actors (Law, 1992). The alliance formed based on a common interest defined by the focal actor is known as an *actor-network*. Alliances are strengthened by *artifacts* which are inscriptions of the interests of the network and its actors. An actor-network is considered to be heterogeneous because it can include individuals, organisations, and standards, in other words a combination of both human and nonhuman elements. More importantly each element has been enrolled based on an aligned interest. The process of alignment of the interests of various actors with that of the focal actor is called *translation*. According to Law (1992:387), effective translation is contingent on the situation. This means that there is no absolute means of ensuring effective translation. Furthermore, for the purpose of analysis, Sarker *et al.*, (2006:54) point out that in order for the process of translation to be best understood, it must be examined from the vantage point of a particular actor. This is because there could be many actors initiating and engaging in translation processes with differing interests and there may be other parties that may initiate parallel translation processes, usually with an expectation of steering the process

in a direction which will favour them more. Furthermore, they suggest that for analysis purposes, it would be best to select an actor whose perspective makes more sense within the context in order to describe the translation process more accurately.

Actors within an actor-network may be *punctualised*. This means that heterogeneous actors within a network can be grouped together based on similar interests in order to reduce the complexity of the network. The potential problems with punctualising actors are that individual actors within a punctualised actor may develop interests different to that of the actor-network and the interests inscribed in the punctualised actor. Often this is because it is 'assumed' that the individual actors within a punctualised actor will conform to the interests inscribed in the punctualised actor. This could lead to the disintegration of an actor-network. (Sarker *et al*., 2006:54, 70). Law (1992) suggests that for the purpose of analysis, the view of an actor must be adjusted from a punctualised actor to the individual actors when it appears that the actor-network is likely to degenerate. The concept of punctualisation therefore enables the analyst to view the network at different levels of abstraction, depending on the objectives of the research. In the next subsection, the researcher will attempt to describe the moments of translation.

3.2.1. Problematisation

The first moment of translation, *problematisation*, is where the focal actor identifies its interests by framing a problem. The focal actor will identify relevant actors and establish how they are affected by the said problem. The focal actor will look at possible ways to address the problem and in doing so will establish an OPP. This means that all actors consciously change the alignment of their interests with that of the focal actor by passing through the OPP to solve the identified problem.

3.2.2. Interessement

This is the second stage of translation and it involves convincing all identified actors to realign their interests with that of the focal actor. This process includes all heterogeneous actors. Often incentives are offered for actors to realign their interests and maintain their alignment with the interests of the focal actor. The interessement process can involve negotiating with individual actors or a *representative* for an actor or actors. Often nonhuman actors require representatives to negotiate on their behalf. It is not, however, guaranteed that when a representative agrees to the realignment of interests that the actors being represented will abide by the agreement. In the event that actors fail to maintain the alignment of interests by failing to act as promised by the representative, this leads to what is known as a *betrayal*.

3.2.3. Enrolment

If the interessement process is successful, the focal actor defines the role that each actor will play in the newly formed actor-network. This process is called *enrolment*. It is possible, though, that even after the process of enrolment, actors can betray the actor-network. This is why *inscription* is important. It ensures 'stabilisation' of the actor-network. The process of inscription is a means to record the commitments made by each actor that has been enrolled and to make this part of the 'shared memory' of the 'social system'. Sarker *et al*. offer some examples for inscription, such as a software requirements specification for a nonhuman actor such as a software program (2006:78), a contract for a human actor (2006:78) or plans for the actor-network in general (2006:79).

3.2.4. Mobilisation

The process of stabilising the network through various means of inscription is referred to as *mobilisation*, the last moment of translation. Sarker *et al*. warn against the concept of *irreversibility*. This is when an actor-network becomes inflexible. In other words, the inscribed interests of the actor-network cannot be changed in response to changing circumstances or a changing environment in which the actor-network finds itself (2006:79). In this case the actors continue to serve the interests that the actor-network has inscribed in them even after it has become irrelevant. A further warning is issued in respect of competing actor-networks. The actors within an actor-network are always susceptible to 'poaching' by other actor-networks. Often this is attributed to the fact that actors find it difficult to serve the interests of more than one actor-network, often leading to the disintegration of one of the actor-networks. It is also important to note that owing to punctualisation and disintegration of actor-networks, the focal actor may be different at different points of time during the translation process (Sarker *et al*., 2006:54).

3.3. ANT and information systems research

Lee (2001:iii) states that "[r]esearch in the information systems field examines more than just the technological system, or just the social system, or even the two systems side by side; in addition, it investigates the phenomena that emerge when the two interact." It is for this very reason that ANT is promoted by Aanestad, Berg and Hanseth (2004:117) as making a significant contribution to IS research. Their argument in favour of ANT as a suitable analysis tool is because it can help researchers understand the interaction between social and technical systems.

Ekelin and Ranerup (2011) utilised ANT to analyse the formation of actor-networks in the implementation of an e-portal in public healthcare. In doing so, they were able to trace the factors that contributed to the enrolment of actors in the development of the technology in e-

government. Their research reports on those factors identified through qualitative empirical research as enrolment devices for the formation of the actor-network. They posit that IT can also be an enrolment device for the formation of an actor-network (Ekelin & Ranerup, 2011:249), which is why the factors for enrolling user actors were the functionality of the system to be developed. Burgess and Tatnall (2002) also utilised ANT to analyse the implementation and adoption by businesses of an e-portal, but for business-to-business e-commerce in the small to medium enterprise sector. They recognised the usefulness of ANT to analyse the interactions between IT and people, given the sociotechnical nature of ISs. They argue that ANT provides a balanced explanation for the choice of adoption by businesses, as opposed to attributing it to either technological or social factors. What emerged from their study is that the decision to adopt was not merely a 'yes or no' option, but the analysis conducted through the utilisation of ANT as a theoretical lens revealed that the decision was based on a complex set of negotiations between heterogeneous entities, that is human and nonhuman actors (Burgess & Tatnall, 2002:187).

Esnault, Vermeulin and Zeiliger (2006) looked to ANT in order to develop a methodology that informs future application of a participatory design approach for the development of suitable tools for utilisation by communities of practice. A participatory design approach involves negotiation between various stakeholders of the development, including users and designers. It was envisaged that through the utilisation of ANT they could develop a framework which would foster the participation of various, heterogeneous, stakeholders in the design process, including the participation or influence of nonhuman actors such as artifacts or organisations (Esnault *et al*., 2006:301). Their reasons for utilising ANT are motivated in particular by the fact that the participatory design approach relies largely on efficient participation. ANT provides a conceptual framework that could inform the design of a methodology to sustain efficient participation.

Other examples of where ANT has been applied in the IS field include Tatnall's (2000) study into the adoption of Visual Basic as a programming language at an Australian university, Elgali and Kalman's (2010) utilisation of ANT to understand the factors that led to the construction of failure concept around the integration of ICT into educational systems, Tatnall and Lepa's (2003) study of the adoption of the Internet and e-commerce by older people and the previously mentioned study by Chae *et al*. (2005), which studied the knowledge sharing activities within communities of practice and networks of practice.

The literature is scant in as far as the utilisation of ANT as an analysis tool in empirical studies in knowledge management, knowledge sharing or academia is concerned. As a result, this research presents a novel way of studying knowledge sharing factors in the higher education context.

3.4. ANT research approach

ANT is a suitable theoretical lens for understanding the sociotechnical factors influencing knowledge sharing in higher education as it not only encompasses technological and human factors, but also actors on an individual level and organisational level, lending itself to varying levels of analysis (Sarker *et al.*, 2006:53). Furthermore, the stability of a network of aligned interests was analysed in terms of the extent to which the institutionalisation of the use of the techniques contributed to the stability of the network. Due to the fact that actor-networks are often competing with other actor-networks, particularly for resources, actor loyalty must be maintained to prevent the network from fragmenting (Goody & Hall, 2007:186). ANT was utilised in conjunction with historical and contextual analysis to trace the emergence of the explicit sociotechnical conditions, within which to represent information to enable sharing of knowledge amongst academics.

The researcher identifies the following goals for utilising ANT as a lens to understand and interpret the knowledge sharing dynamics of an academic environment. These goals are also intended to examine the network of aligned interests, some of which are adopted from the theoretical study conducted by Goody and Hall (2007):

- Identify the main players in an academic environment's knowledge sharing actor-network.
- Determine the factors affecting the inclusion of a new actor in an existing network.
- Investigate the issues that affect the strength of the knowledge sharing actor-network as compared to other internal actor-networks.
- Investigate why the knowledge sharing actor-network is not powerful enough to promote knowledge sharing.
- Investigate what factors impact on the institutionalisation of the network.

In particular, these goals for the research addressed the following assumptions that usually pervade knowledge management implementation or the promotion of knowledge sharing:

- Knowledge sharers will always maintain their interest in the knowledge sharing actor-network and act in accordance with the interests inscribed in them.
- The focal actor at the forefront of the knowledge sharing actor-network will continue to command sufficient power and influence to motivate knowledge sharing.
- The knowledge sharing actor-network is not competing with any other internal actor-networks and therefore does not need to be nurtured to maintain the strength of the actor-network, as it competes for organisational resources.

Furthermore, Burgess and Tatnall (2002:183) suggest that any IS researcher using the ANT approach should focus on the formation of an actor-network, the alliances formed between

human and nonhuman actors as a result of the formation, and the negotiations that enable the network formation.

3.5. Conceptual framework

Given the above overview of ANT and its relevance in IS research and particularly its application in this knowledge management and knowledge sharing research in academia, a conceptual framework based on ANT was developed to guide the collection, analysis and interpretation of data. This framework is depicted in Figure 3.1. The components of ANT are incorporated into the framework from two perspectives:

- Those components which lead to the formation and growth of a knowledge sharing actor-network.
- Those components which could impact on the strength of the actor-network.

The actor-network is formed by the application of the four moments of translation which are applied by the focal actor. These four moments of translation are aimed at identifying heterogeneous actors in the actor-network, which in the context of this research includes people, processes and technology. The role of each actor is determined, and methods for negotiating with actors to align with the interest of the focal actor are applied to encourage the actors to pass through the OPP. However, in order for these actors to agree to the alignment of their interests with that of the focal actor, the OPP must be well-established. Once the actors are enrolled into the actor-network, mobilisation must occur in order to formalise the network through a process of inscription. This is a matter of institutionalisation. Punctualisation has been incorporated into the framework as a potential threat to the strength of the actor-network, as this is a typical issue within knowledge sharing research.

Other elements of ANT are incorporated into the framework as potential threats to the strength of the actor-network, including the threat of power issues, competing networks, and the betrayal of the respective actors within the network. The knowledge sharing factors that have been gleaned from the literature have been incorporated into the framework under the respective ANT components. From this perspective typical knowledge sharing factors can be viewed through ANT as a lens. The collection of data, and the analysis and interpretation from the perspective of the conceptual framework will either validate or refute these factors in respect of the higher education context and may reveal new factors, all of which will lead to refinement of the original conceptual framework for the academic context.

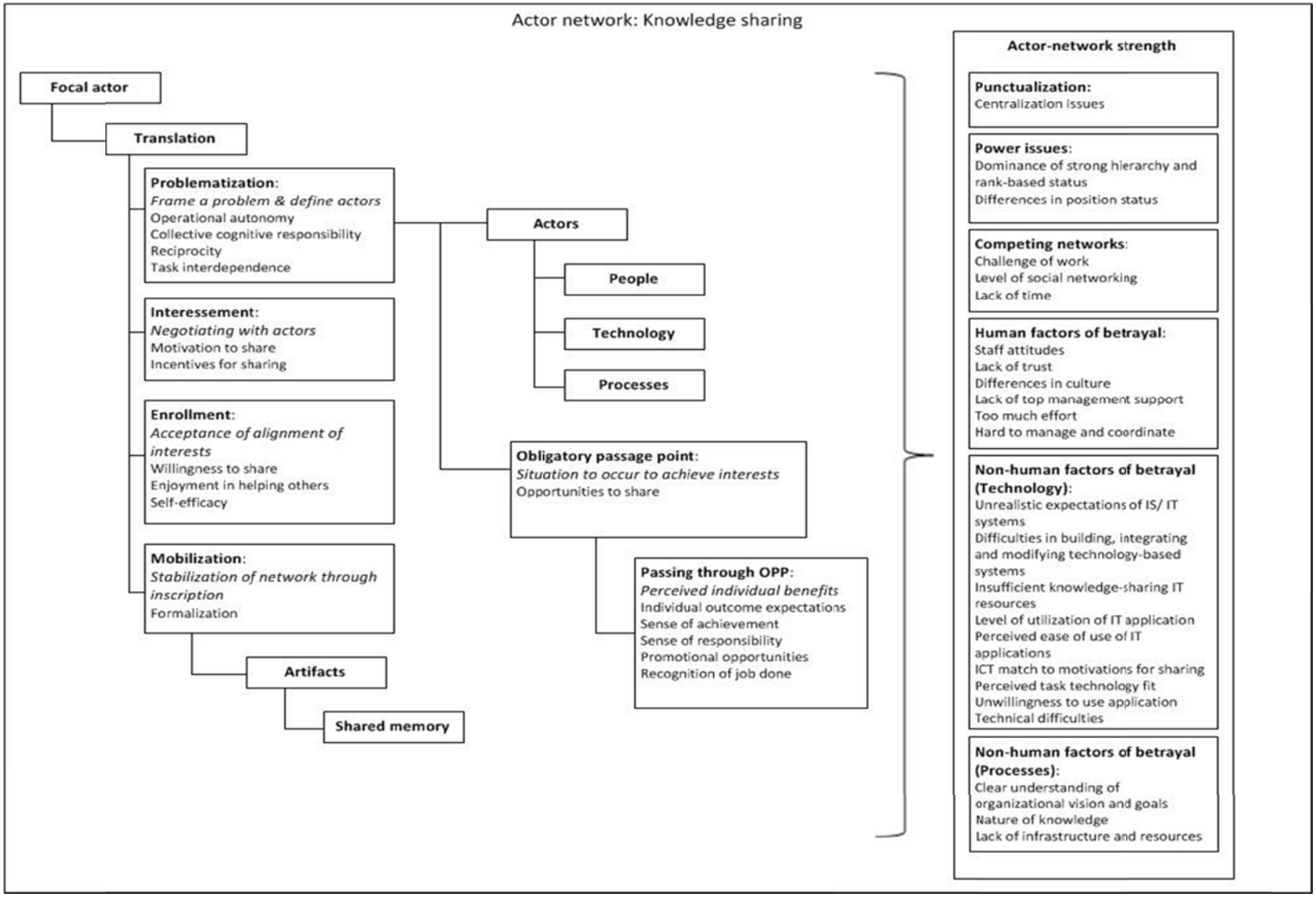

Figure 3.1: Conceptual framework

CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY

4.1. Introduction

4.1.1. Research methodology

The review of the literature has revealed knowledge sharing factors to be a social phenomenon. Research focusing on people and social phenomena is positioned in the social sciences, where research methods are divided into qualitative and quantitative approaches (Payne & Payne, 2004:175). Where a quantitative research methodology attempts to measure social phenomena by numbers, a qualitative methodology, however, does not produce findings based on statistical analysis (Strauss & Corbin, 1990:17), but rather focuses on the in-depth understanding of the experiences of the units of analysis through words and opinions. Where quantitative analysis is applicable for a large sample for generalisation of findings, qualitative analysis concentrates on a subjective account of respondents, concentrating on the individual, rather than on generalisation (Mayring, 2003). Qualitative research is used in the description of phenomena, particularly in the social realm. Given the nature of this research, a qualitative research methodology was selected due to the need to interact with the respondents of the research. Quantitative research methods tend to have little to no contact with people (Silverman, 2006) and a quantitative research in this context would limit the description of these phenomena.

Methodologically, qualitative studies involve “a highly intensive and detailed analysis of the accounts produced by a comparatively small number of participants” (Clifton, Larkin, & Watts 2006:106). The accounts of the participants are more suitably captured via interviews and the personal involvement of the researcher enables an empathetic understanding of the social phenomena in order to generate new conceptual and theoretical understandings of the phenomena (Pope, May & Popay, 2007). Therefore, the aim of this research is not to simply generate a combined list of factors that affect knowledge sharing in higher education, but rather aims to gain an in-depth insight into what academics perceive as factors that affect knowledge sharing in their context.

Qualitative methods, however, are criticised in terms of their validity and reliability, as well as the subjectivity of the researcher. These aspects, however, are addressed under section 4.11.3. Furthermore, qualitative studies are limited in terms of their generalizability to a population, given that non-probability sampling methods are used. The purpose of this research, however, is not to generalise the findings, but to explore the case in an in-depth manner in order to understand the social phenomena.

Rich qualitative empirical material was collected that communicated the views of the actors in the context of the research. The research was empirical in nature, as it entailed interaction with the units of analysis, being the academics (Leedy & Ormond, 2001:105).

4.1.2. Research approach

An inductive research approach was used, as this is usually used in qualitative studies, backed up with a theoretical framework. However, true to the nature of inductive inquiry, the theoretical framework did not guide the data collection, but the data guided the research. Patton (1990) points out that in the inductive approach the themes are linked to the data, and not to any preexisting coding frame (Braun & Clarke, 2006:89). The underpinning theory helped to put the data into context. Given the context of the research, it was difficult to predict what an academic in higher education would perceive as a factor affecting their willingness or ability to share their knowledge or to access the knowledge of their colleagues or peers. Therefore an inductive method for exploring these factors was employed.

William (2006), however, points out that social research can involve a combination of deductive and inductive reasoning processes. Deductive reasoning works from the general to the specific, particularly in the case where a theory is confirmed. However, inductive reasoning works from the specific (data) to the general (theory). Therefore the aim is to develop a theory from the data. This research, however, employs to a degree some deductive analysis. The aim is not to develop a theory from the data. At the same time, the aim is also not to work from preexisting themes, as this would defeat the purpose of exploring the knowledge sharing factors from the viewpoint of the units of analysis. Rather, the factors are explored inductively, but the use of ANT employs deductive analysis to conceptualise the factors and explain them in relation to each other. This fits in with the interpretive case study research strategy employed in the following section.

4.1.3. Research strategy

The research was an interpretive case study based on the theoretical framework of ANT. Merriam (1998:9) defines a case study as “an examination of a specific phenomenon, such as a programme, an event, a process, an institution, or a social group”. Case study research is conducted when the focus of the research or the unit of study is limited to a certain number of units of analysis (Kruger & Welman, 2001:182). Case study research is a qualitative research method. It is differentiated from other qualitative methods in terms of its intensive description and analysis of a ‘bounded’ system (Smith, 1978), such as a single organisation. Merriam (1998:12) emphasises the acquisition of tacit knowledge as a benefit of case study research and Stake (1995:3) points out that even though the main product of case study research is the case itself, the case can be instrumental in further, broader, investigations into the phenomenon. Furthermore, a case study can be descriptive, interpretive or

evaluative (Merriam, 1998:39-40). Due to the theoretical orientation of this research, it is classified as an interpretive case study (Laws & McLeod, 2004:8).

4.1.4. Research design

Given that the purpose of case study research is to obtain an in-depth understanding of a given situation, the interest of a study of this nature is 'in discovery rather than confirmation' (Laws & McLeod, 2004:4). This emphasises the choice for an exploratory study that discovers the factors that affect knowledge sharing inductively. Van der Merwe (1996:279) explains that exploratory research focuses on the investigation of a relatively unknown area with the aim of obtaining new insights into a phenomenon. This was particularly needed in this research due to the meagre literature available in as far as the utilisation of ANT to understand the power issues inherent in the sociotechnical nature of knowledge sharing. The research was therefore exploratory in nature in order to investigate the perceptions of the academic staff and to describe their knowledge needs, knowledge sharing practices and the factors influencing knowledge sharing.

Burgess and Tatnall (2002:182), who utilised ANT in an IS-based study, chose to employ qualitative data collection methods, as they allow the researcher to explore the formation of actor-networks, and examine the alliances built during the process of translation. Sarker *et al*. (2006) employed an interpretive case study methodology in their research utilising ANT as a theoretical lens. Elgali and Kalman's (2010) utilisation of ANT for their IS-based research also utilised an interpretive methodology.

When conducting case study, qualitative research based on ANT, Callon (1986) emphasises the need to carefully choose the viewpoint from which the researcher will conduct the analysis. In other words, the actors should be carefully selected based on the value that they will add in order to accurately describe knowledge sharing phenomena. Given the focus on sharing operational knowledge in the higher education context, this research specifically focused on the viewpoint of academics as actors from a higher education institution. This would be the best viewpoint for understanding knowledge sharing dynamics within the higher education context, specifically from a teaching, learning and assessment perspective.

4.2. Overview of case study

4.2.1. Background

The selected University of Technology (UoT) is one of six Universities of Technology in South Africa. A UoT is mandated to offer programmes that are aimed at producing practitioner graduates, focusing on career-oriented training and applied research. They offer a different programme structure to that of traditional universities. Where traditional universities focus mainly on theoretical underpinning and less training, UoTs offer

technological career directed education, through engagement with government, business and industry at large.

The UoT in this research encompasses six faculties, including the Faculty of Applied Sciences, Faculty of Business, Faculty of Education and Social Sciences, Faculty of Engineering, Faculty of Health and Wellness Sciences and Faculty of Informatics and Design; across six main campuses and a number of satellite campuses; and boasting over 30 000 students. These faculties are further divided into schools and/ or departments. Programmes are offered in English, although the majority of students do not speak English as a first language. The UoT offers National diplomas, Baccalaureus Technologiae (BTech) degrees, Magister Technologiae (MTech) degrees and Doctor Technologiae (DTech) degrees. A two-year National Higher Certificate (NHC), which articulates into a National Diploma, is offered in some schools. Classes are offered five days a week during the day and evenings to full-time and part-time students, respectively. Furthermore, the staff compliment is made up of junior lecturers, lecturers and senior lecturers. Most staff members are appointed on a permanent basis, but some staff members work on a contractual basis, and much of these contractual positions generate a high turnover due the temporary nature of the positions.

The UoT faces competition from the traditional, well-established universities and is in the process of recurriculating their programmes across the institution. Teaching and learning constitutes the largest part of what the UoT does, given that the bulk of students are at undergraduate level. However, research features very prominently, particularly because research informs teaching and learning and contributes to the academic community at large. This creates a connection between the activities that take place at the institution.

The organisational structure is highly hierarchical, including several different levels of administration within the respective faculties, including deans, assistant deans, associate deans and faculty managers. Typically, a faculty encompasses several schools and/ or departments. If schools exist, these schools contain several departments. A school is headed by a head of school (HOS) and a department by a head of department (HOD). Each department offers a collection of related programmes. The HOD manages the lecturers that teach and research within a department. Several subjects are offered within a programme, headed by a subject coordinator who coordinates the administrative, assessment, harmonisation, best practice and academic content within the subject. Any lecturer teaching that subject is part of the subject group. A subject coordinator is typically a lecturer within the said subject group. A coordinator can coordinate more than one subject and a lecturer can teach in more than one subject group. An HOD can also elect to retain some classes, and hence could be a lecturer and a subject coordinator.

Research forms part of a department and any research undertaken in the department is considered as research output for that department. Research can be conducted by lecturers, heads of departments and post-graduate students. Any entity within the institution that conducts research is considered to be an academic.

The Figure 4.1 below is a concept map which outlines the relationships between the main entities within the environment of a UoT. Given the fact that the UoT the researcher is concerned with is one of the largest in South Africa, with several campuses to manage as well as an ongoing recurriculation process, a fair amount of harmonisation is required for the UoT to compete. This, however, cannot occur unless a culture of knowledge sharing is nurtured. Sharing, however, should not only occur at the subject level, but across departments and faculties.

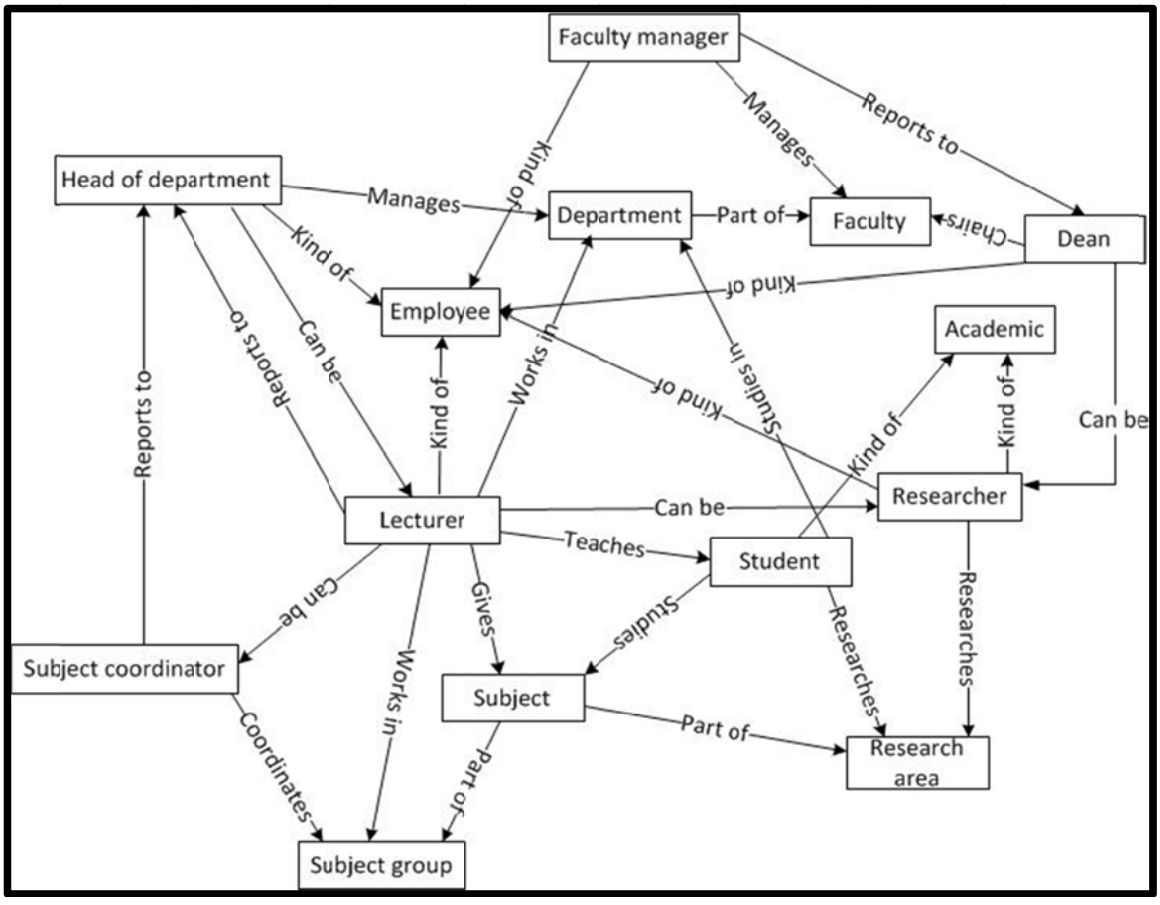

Figure 4.1: Concept map of UoT context

The knowledge which is pertinent to the job of an academic in higher education is related to teaching and learning, curriculum development, assessment and examination, academic administration and research. The challenge is to create organisational memory in a formal and systematic manner, which can store policies, procedures, best practice and know-how to make this knowledge accessible to more than one individual across the institution. As it currently stands, informal methods of creating and managing knowledge are utilised by academics, and this is mostly on an individual, fragmented basis. When an academic staff member leaves, they often leave with the knowledge that they have accumulated over the term of their tenure. This knowledge base has to be re-built by a new staff member. This is why knowledge sharing should be nurtured, as the first step to achieving an organisational memory.

4.2.2. Units of analysis

The population included all academic staff members from the selected UoT who are actively participating in teaching and learning activities and are appointed at a level of junior lecturer, lecturer and senior lecturer.

The participants were predetermined based on their involvement in teaching and learning activities that would utilise the 'operational' knowledge that is the focus of this research. Even though the academic staff complement constitutes not only junior lecturers, lecturers and senior lecturers, but also associate professors and professors, the largest staff compliment that undertake the teaching and learning activities, as previously outlined in the research, to the largest degree would be junior lecturers, lecturers and senior lecturers. Associate professors and professors at UoTs generally concentrate on research rather than teaching and learning. Hence, the population is determined based on a common element, being their degree of participation in teaching and learning activities, which is relevant to the research objectives.

The researcher selected varying levels of tenure to ensure that the units of analysis spanned several different disciplines or varying areas of expertise, that is, from different faculties, in order to obtain a well-rounded view of the academic domain. This would also reveal the potential differences in perceptions that each staff member would offer. For instance, junior lecturers are often fairly new to the job and have more recently experienced situations where they have attempted to obtain information that they needed to effectively and efficiently carry out tasks related to their job, and often seek out knowledge experts within their discipline. On the other end of the scale, senior lecturers tend to keep to themselves and do not necessarily feel like they need to participate in knowledge sharing efforts and rarely seek out knowledge experts as they are fairly comfortable in their field. Furthermore, the culture of the department

or faculty usually dictates whether or not they will seek out ways to share knowledge with newly appointed academics, particularly at the junior level.

4.3. Sampling

A purposive sampling method was applied as this is usually the preferred method of sampling for case study research (Kruger & Welman, 2001:189) as the units of analysis will be data rich. Purposive sampling is an example of non-probability sampling (Kruger & Welman, 2001:63), so the results cannot be generalised beyond the sample (Fairfax, 2012:3). The purpose of the research is therefore not to generalise the findings, but to be able to describe the sample in order to make recommendations for varying contexts.

The sample constituted eighteen preselected academic staff members of the UoT. One academic from each level of tenure, including junior lecturer, lecturer and senior lecturer, was selected from six faculties within a selected UoT. These faculties included Applied Sciences, Business, Education and Social Sciences, Engineering, Health and Wellness Sciences and Informatics and Design. The Table 4.1 below outlines the population from which the sample was taken. The numbers were taken from the respective faculty handbooks and were deemed an accurate reflection of the staff complement constituting the population.

Table 4.1: Population and sample

Faculty	Department	Level	Faculty Total	Interviewed
Applied sciences	Organic chemistry	Junior lecturer	5	1
	Chemical engineering	Lecturer	63	1
	Organic chemistry	Senior lecturer	13	1
Business	Internal auditing and information systems	Junior lecturer	24	1
	Internal auditing and information systems	Lecturer	100	1
	Office management and technology	Senior lecturer	31	1
Education	General education and training	Junior lecturer	6	1
	General education and training	Lecturer	56	1
	General education and training	Senior lecturer	18	1
Engineering	Electrical, electronic and computer engineering	Junior lecturer	29	1
	Electrical, electronic and computer engineering	Lecturer	99	1
	Electrical, electronic and computer engineering	Senior lecturer	36	1
Informatics and design	Information Technology	Junior lecturer	10	1
	Information Technology	Lecturer	65	1
	Information Technology	Senior lecturer	24	1
Health and Wellness	Wellness Sciences	Junior lecturer	17	1
	Wellness Sciences	Lecturer	25	2
	Wellness Sciences	Senior lecturer	7	0

As a student, the researcher had a limited timeframe within which to conduct the interviews, hence the sample size may present a limitation for the research. However, the purposive sample size for qualitative research utilising interviews varies. Bunce, Guest and Johnson (2006:60), reported that the purposive sample size for qualitative research is based on theoretical saturation. This finding was based on their review of the literature on guidelines for qualitative research in the health sciences. This can, however, be applied to studies within social sciences as well, as their research was extended to the social and behavioural science literature (ibid.). Their research focuses on theoretical saturation being the standard by which purposive sample sizes are determined in qualitative research. However, their review did not reveal how saturation can be determined, nor did it reveal practical guidelines for determining the ideal sample size for interviews.

Some researchers that recommend actual sample sizes (without evidence for their recommendations) include, amongst others, Bertaux (1981) who recommends a sample of at least fifteen interviews for qualitative research, and Kuzel (1992:41), who recommended six to eight interviews for a homogeneous sample and twelve to twenty for “maximum variation”. Given the lack of empirical evidence that supports these recommendations, Bunce *et al.* (ibid.) set out to determine a numerical guideline for sample sizes in purposive sampling for qualitative interviews on the basis of reaching theoretical saturation. Their study revealed that they were able to reach a point of saturation after twelve interviews undertaken in a health science research (2006:74). Theoretical saturation is the point at which “no additional data are being found whereby the (researcher) can develop properties of the category” (Glaser & Strauss, 1967:65). This means that when similar codes are seen over and over again within a category, the researcher can be satisfied that a level of saturation has been reached for that category. The researcher was therefore satisfied with the sample size of eighteen academic staff members, representing a variation of the population in terms of level of tenure and work context based on the selection from each faculty.

The sampling method was purposive to the extent that a junior lecturer, lecturer and senior lecturer of each faculty of the institution were selected to participate in the research. By interviewing junior and senior staff, the researcher aimed to attain a well-rounded view of knowledge sharing factors in the institution and to compare the responses obtained from the respondents. The researcher obtained the names of academic staff of each faculty from the respective faculty handbooks - a publicly available document available to anyone interested in learning more about the faculty courses and staff members. The format of each faculty handbook is slightly different, but the basic information pertains to the courses and staff members. Each handbook lists the staff members that teach in that faculty, along with their title, that is whether or not they are a junior lecturer, lecturer or senior lecturer.

A selection of each level was made for each faculty. Using this selection, the researcher obtained the email addresses of each staff member selected by using the institutional website to search for their contact details. An email was sent to each selected academic staff member to invite them to take part in the research. The email, which appears as Appendix B, outlines the purpose of the research, as well as some ethical information pertaining to the respondents' anonymity and the voluntary nature of the study. This is in line with the ethical considerations outlined in the institutional ethics policy pertaining to research.

4.4. Inclusion and exclusion criteria

The academic staff members included in the population were junior lecturers, lecturers and senior lecturers who engage more often in operational activities pertaining to teaching and learning. It is this operational knowledge which is the focus of this research. Even though there are associate professors and professors who are responsible for teaching and learning activities, their focus is more on research activities and their degree of participation in teaching and learning is less than that of the rest of the academic staff complement previously outlined.

As a result, professors and associate professors were excluded from the research, along with any staff employed in a managerial position, such as heads of departments and heads of schools. Administrative staff, such as secretaries and staff employed in support departments such as the faculty office were also excluded.

4.5. Recruitment of research participants

The data collection processes commenced with an email invitation to eighteen preselected academic staff members of the UoT, constituting the sample of the population. Only one response was received after the initial email invitation, and this response was negative. Two days later a second email invitation was sent to the same selection of staff, with the inclusion of a new respondent to replace the person that responded negatively. After this invitation, two positive responses were received. Thereafter no other responses were received. The researcher therefore chose to personally visit the offices of the academic staff members in the six faculties.

The academic staff members visited were not the same staff members that were invited via the email. However, the sampling method was still purposive to the extent that a junior lecturer, lecturer and senior lecturer for each faculty were selected. Some respondents recommended an academic in their faculty who could be interviewed based on this sampling method. By personally visiting the offices of the academic staff members, the researcher was able to build a rapport and level of trust with the respondents, and many of them admitted to this. With an email invitation, the respondents cannot put a face to the researcher and hence

do not always feel the need to participate. But, when these members of staff were visited and the purpose of the research was explained to them, they were more than willing to participate and felt reassured. Subsequent to securing a date for the interview, the researcher emailed the invitation to the respondents for them to peruse the details of the research, the letter of consent from the Human Resource Director and the interview questions.

4.6. Data collection methods

The researcher made use of semi-structured, face-to-face interviews to obtain the views of the academic actors. The interviews contained questions about knowledge sharing activities, actors, intentions and technologies. The focus was on operational knowledge pertaining to teaching and learning, assessment, harmonisation, best practice, lessons learned, policies, procedures, research and academic content.

According to Ghauri and Grønhaug (2005:123), there are three types of interview questions, including:

a) Structured questions: where both the questions and answers are predetermined.

b) Unstructured questions: where the questions are more or less predetermined, but the answers are not predetermined.

c) Semi-structured questions: where the questions are predetermined, but the answers are not predetermined.

In the case of unstructured and semi-structured questions, the interviewees may use their own words to answer the questions, as opposed to using predetermined responses, as in the case of structured questions. However, Kruger and Welman (2001:161) contend that various degrees of structuredness are possible in interviews, particularly between the two extremes of completely unstructured interviews and structured interviews. Semi-structured interviews are positioned between these two extremes. Therefore, semi-structured interviews could borrow attributes of structured and unstructured interviews, as long as the interviewer is in a position to probe in the case of vague responses or as follow-up questions to relatively structured questions.

Given that this research aimed to explore and determine knowledge sharing factors in the academic context by obtaining the views of the academics, semi-structured questions were better suited for the interviews. Semi-structured questions give guidance to the kind of answers expected in relation to the concepts of ANT. Furthermore, given that the knowledge sharing factors that emerged in the business context should not be reapplied in the academic context, the factors that emerge out of the academic context should be discovered through the responses of the academic interviewees in their own words. Knowledge is context-

specific and dynamic, therefore the knowledge sharing factors that originated in the business context do not necessarily apply to the academic context.

Even though new questions arose during the interview, apart from the predetermined questions that were compiled prior to the interviews, these new questions were merely used to probe for more detail or understanding of the answer. These questions did not deviate from the main predetermined interview questions which were structured around the concepts of ANT. Unstructured interviews are often used in an exploratory research context, but semi-structured interviews allow for both direction and versatility, enabling the interviewer to adapt the formulated questions according to the varying backgrounds of the respondents as well as allow interviewer to clarify vague responses. Utilisation of face-to-face interviews allowed the researcher the opportunity to explain the questions in order to improve the accuracy of the responses and to obtain in-depth responses where the researcher probed for a clearer response or for more detail. An interview instrument also lends itself to probing for details which are not predefined, as it is exploratory in nature and particularly useful in situations where there is no clear or single outcome (Annansingh *et al.*, 2011:263).

4.7. Advantages and disadvantages of data collection instrument

By conducting interviews, the researcher was in control of the level of response rate (Kruger & Welman, 2001:159). Furthermore, interviews allow for the collection of large quantities of relevant data in a short space of time (Marshall & Rossman, 1995:80). Due to the sociotechnical nature of the topic and the potential power issues anticipated to emerge through the research, interviews were ideal for obtaining the first response that the interviewee would supply, as opposed to giving respondents time to consider the potential implications of their answers or allowing them to change their responses as questionnaires usually permit. The true feelings of the respondents were therefore revealed which proved valuable in the realisation of the results when viewed through ANT as the theoretical lens.

Quantitative methods of survey are more reliable and have higher validity (Bryman, 2008) than qualitative interviews. This is due in part to the degree of structure. This of course also impacts on the generalizability of the data (Lampard & Pole, 2002). The focus of this research, however, is not to generalise. Furthermore, exploratory studies need to be less structured (Silverman, 2000) to allow discovery of factors.

4.8. Design of interview

Interview questions were developed based on the review of the literature where gaps have been identified. Furthermore, the conceptual framework of ANT guided the interview questions. This means that the questions were arranged according to the themes related to

the conceptual framework. Appendix A outlines the interview schedule consisting of nineteen open-ended questions that have been structured around the framework in Figure 3.1.

The major themes that emerged from the review of the literature included social factors, technology factors and process factors. The questions that were asked were created based on the major themes identified in the literature and were put into perspective using ANT as a guiding framework. Therefore ANT enabled the researcher to view the themes in relation to each other and to know what to address in the research.

The concepts of ANT were used to develop the questions. The themes of social, process and technology factors are analysed by utilising ANT as a theoretical lens. As Malbon (1999:315) points out, "[i]f the researcher is beginning the investigation with a fairly clear focus, rather than a very general notion of wanting to do research on a topic, it is likely that the interviews will be semi-structured ones, so that the more specific issues can be addressed". Furthermore, the aims of the research instrument should be to collect data that will answer the research questions. Given that this research attempted to look at the major themes identified in the literature in a novel way, the aim was not simply to identify factors for each theme, but to use ANT to understand how to create and sustain a knowledge sharing network, while considering the factors that affect these goals. This research has not attempted to prove the hypotheses about the main themes affecting knowledge sharing in an organisation, but accepts that these themes are relevant to an academic environment. Rather, the focus is on explaining these themes through a new perspective and to inductively explore the factors relevant to each theme and to the main concepts of ANT. The semi-structured interview is suited to this purpose, as not only do the questions "reflect the concerns of the researcher" but also "values the point of view of the interviewee" (Malbon, 1999:313). Kruger and Welman (2001) are in support of this technique, stating that the semi-structured interview should suggest the themes of discussion.

When constructing the interview instrument, it is important to define these themes and categories beforehand, as this will allow the filtering of statements to fit into the categories. The categories were therefore developed deductively. The theoretical themes and concepts of ANT were used in the development of the categories and hence in the interview questions. There is an overlap in some of the interview questions to enable validation of the respondent's answers by correlations made between answers within an interview. Table 4.2 below illustrates how the interview questions are related to the research questions posed.

Table 4.2: Construction of interview questions

Research objective: **Determine those factors that have an influencing role on the success of forming a knowledge sharing network.**	
What factors influence the enrolment of academic actors in a knowledge sharing actor-network?	Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level? Who should be the driver/s of knowledge sharing activities within the area you have stipulated above? What are the problems that knowledge sharing could address in your area of work? Do you think that academic staff should share knowledge? Do you think that knowledge sharing processes should exist in the organisation? Do you think that technology should be used to share knowledge? What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing? What would you consider as influencing/ motivating factors on your decision to share knowledge?
Research objective: Determine those factors which can have a positive influence on the growth of the knowledge sharing network.	
What factors influence the growth of a knowledge sharing actor-network?	What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge? What personal benefits do you perceive you would/ should gain out of sharing your knowledge? What do you think could sustain knowledge sharing within your subject, department or faculty?
Research objective: Determine those factors that can pose a threat to the stability of a knowledge sharing network.	
What factors influence the stability of a knowledge sharing actor-network?	Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? Elaborate on what would constitute a power issue. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge? Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing? Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing? Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?
Research objective: Determine those factors which can help to institutionalise the knowledge sharing network.	
What factors influence the institutionalisation of a knowledge sharing actor-network?	Would your level of willingness to share knowledge decrease if it was not made compulsory? How can knowledge sharing as a process be formalised/ institutionalised?

4.9. Piloting of research instrument

The interview schedule was piloted with an academic staff member from the population to ensure its validity. Fowler (1993:80) explains that validity is the extent to which the answers provided by the respondent means what the researcher expects it to mean and whether the

answer is in fact a true measure. The pilot ensured that the questions were presented at a level suitable for the characteristics of the interviewee (the degree of complexity), the questions were clear and unambiguous, and the extent to which the predetermined questions were successful in obtaining relevant answers that could be mapped to the concepts of ANT. The pilot also determined the degree of sensitivity, as well as the length of the interview, which was estimated to be between thirty minutes to forty-five minutes.

The interview questions were not sent to the respondent for perusal prior to the pilot interview. The pilot interview revealed that some questions had to be amended for suitability to the framework. Furthermore, because the respondent had not perused the interview questions prior to the interview, she did not understand some of the questions well enough to answer the questions adequately. As a result, a second pilot interview using an academic staff member from the population was undertaken subsequent to amending the interview questions. The amended questions were sent to the respondent of the second pilot interview to see whether this would improve the quality of the responses from the respondent. The second pilot was more successful due in part to the improvement in the interview questions, and in part to the fact that the respondent was able to peruse the questions prior to the interview in order to think about their answers and attempt to make sense of the questions.

It could be argued on the one hand that it is not suitable to share the questions with the respondents prior to the interview because the respondents have time to model their answers, thus affecting the level of honesty. However, it could be argued that because the interviewees' identities are confidential, the respondents were not intimidated and therefore felt free to be honest. Furthermore, knowing that this research would help to improve some of the existing problems pertaining to knowledge sharing, they were more than happy to share their views honestly. Sharing the questions with the respondents before the interviews actually improved the quality of the responses and established a rapport and level of trust with the respondents. The first pilot was not used in the research, but the second pilot was used due to the improved validity and the data collected made a valuable contribution to the research. The final interview schedule was then checked by a colleague as a final check for clarity and understandability.

4.10. Process of data collection

Given the outcome of the pilot interviews, the interview questions were shared as part of the email invitation. Interviews were scheduled at the convenience of the interviewee, and the researcher travelled to the preferred location of the interviewee at their preferred time, ensuring that the interviewees were not rushed and that they felt comfortable. This went a long way to ensure the validity of the interview answers (Bailey, 1987:175). In three cases, however, the respondents were willing to do the interview immediately, which meant that the

interview schedule could not be sent to the respondents for prior perusal. It is also not guaranteed that those who received the interview schedule prior to the interview actually perused the questions. Therefore, the results of the research could be influenced by the fact that some respondents saw the interview questions prior to the interview and some did not. Secondly, the results could also be influenced by how well the respondent understood the concepts of knowledge management and knowledge sharing, even though it was explained to all respondents.

At the commencement of the interviews the concepts of knowledge management and knowledge sharing were explained to the respondents, as this is the main theme of the research and is in line with Fowler's recommendations (1993:1987). The researcher's perceptions of the research problem going in were also explained to the respondents. Furthermore, the respondents were assured of their anonymity, as this is important to ensure complete honesty in their responses (Robson, 1997:128). This was done via the initial soliciting efforts and at the commencement of the interview. By utilising face-to-face interviews, the researcher was able to develop a level of trust with the interviewee (Hislop, 2005:113) and it was useful for sharing tacit knowledge (ibid.), which, as argued in the review of the literature, is not otherwise easily obtained and is invaluable in this context. The process of visiting staff to invite them to participate in the interviews and conducting the actual interviews was undertaken over a period of just over one month between 19 May 2014 and 27 June 2014. In order to allow the respondents to speak freely, some interviews were longer than others, ranging from about twenty minutes to an hour. Eighteen interviews were completed in total, with one respondent of the total sample not holding a position in line with the sampling criteria, that is, their level of tenure. From each of the six faculties, the health and wellness faculty was the only faculty in which a senior lecturer was not interviewed, but two lecturers and one junior lecturer. This was mainly due to accessibility and willingness of the participants.

The interviews were conducted in English. The interview responses were recorded via digital voice recordings, but this was not the main method of capturing the responses of the respondents. The researcher captured responses by writing them down and was later able to replay the recordings to check whether anything was omitted or to ensure that the answer was fully captured. Due to the fact that the ANT framework was used to guide the interview questions, and that the responses later needed to be mapped to the concepts outlined in this framework, the responses of the respondents were summarised as they were delivered. Where probing was necessary, new questions were posed to obtain a better understanding or to obtain a response of a better quality that related more suitably to the framework and knowledge sharing as a process of knowledge management. The transcription of the data was undertaken on the same day that the interview was conducted. The responses were

summarised by cross-referencing what was recorded in the interview and the voice recording of the interview. This was done on the same day to ensure that any other details were still fresh in the mind of the researcher.

Given that interviews are best for sharing tacit knowledge (Hislop, ibid.), it is important to consider that face-to-face communication is best for discovering the nuances of each respondent's answers. Context in particular contributes to each respondent's perceptions and views and the respondents' answers are nuanced by their context and the dynamic of their work environment. It was important to capture these nuances while they were still fresh in the mind of the researcher, as this contributed significantly to the meaning within the responses. It is important to note that the captured responses, in Appendix D, are in some cases a summary of a response given by a respondent. The respondent was allowed to finish what they were saying, and was not interrupted. The researcher then picked out what was needed for the research. This is important when the interview is semi-structured; giving the respondent freedom to answer whatever comes to their minds, but which sometimes can be irrelevant. This is where the researcher probed for a more relevant response or had to distil the responses into a summarised, more appropriate and relevant response. This also helped to prepare the data for analysis into themes and categories related to the concepts of ANT.

4.11. Data analysis and validation

4.11.1. Analysis

Data analysis was conducted using three steps including: organising data, summarising data and interpreting the data (Ary, Jacobs & Razavieh, 2002:465). Miles and Huberman (1994:10) define data reduction as "[the] process of selecting, focusing, simplifying, abstracting and transforming the data that appear in written up field notes of transcriptions". Data organisation and reduction was performed using a process called coding (Ary *et al.*, 2002:465). Coding involved selecting keywords or phrases that related to the major themes previously outlined in section 4.8, including social factors, technology factors and process factors. The concepts of ANT enabled the researcher to view the data collected in a way that made sense of it in order to answer the research questions.

Summarising was done by grouping together similar coded categories (in relation to the concepts) that emerged out of the interviews. According to Ary *et al*. (2002:466), the process of coding into categories and grouping of similar categories is intended to provide a meaningful summary and reconstruction of the collected data for interpretation. The ANT conceptual framework was utilised as a lens for interpretation. The coded data were related to ANT concepts.

4.11.2. Analysis technique

Berg (2007:238) points out that any data collected via interviews must be "condensed and made systematically comparable" before it can be analysed. This requires the use of a coding scheme, more particularly an 'objective' coding scheme (ibid.). The process of condensing the transcripts for systematic comparability is referred to as content analysis. The choice for an interpretive research strategy for this research is affirmed by Berg (2007). He explains that an interpretive research approach is aimed at analysing social phenomena via text. The interpretation of this text depends on the theoretical orientation adopted by the researcher. The data are condensed and sorted via coding operations. This is contradictory to a phenomenological orientation which seeks to understand meaning in text to capture its entire essence, rather than reduce it via coding operations. Interpretive studies therefore aim to uncover patterns whereas a phenomenological approach will aim to understand the meaning behind the patterns.

Holsti (1968:608) defines content analysis as "any technique for making inferences by systematically and objectively identifying special characteristics of messages". The objectivity of data analysis is contingent on the processes of analysis followed. Before the analysis of data can be undertaken, the criteria of selection or 'rules' for coding must be formulated. Analysis must not be undertaken in an arbitrary manner, but the selection criteria must be consistently applied, to ensure reliability and validity of the analysis (Berg, 2007:241).

Content analysis can be both quantitative and qualitative, depending on what processes are followed. Berg (2007:242) explains that a quantitative content analysis approach seeks to count the frequency with which a concept appears in text of transcripts, also known as manifest analysis. Qualitative analysis considers the literal words used in the text and the manner in which the words were used to reveal underlying meanings (ibid.), known as latent manifest. Busch, De Maret, Flynn, Kellum, Le, Meyers, Saunders, White, and Palmquist (1994-2012) distinguish between two kinds of content analysis, namely conceptual analysis and relational analysis. Conceptual analysis seeks to establish either the existence or frequency of concepts using words or phrases that appear in the text. Relational content analysis examines the relationships between the concepts. The existence of a concept and measuring the frequency of concept is related to quantitative content analysis, or manifest analysis. Frequency represents the 'magnitude' of the observation, but Berg (ibid.) cautions against using frequencies to make inferences about the nature of the data. Instead, it should merely be used to provide a comprehensive analysis (ibid.). Busch *et al.* (1994-2012) explain that coding for existence only would potentially limit interpretation because frequency can provide an indication of whether one theme is more significant than the other within a certain

context. Even though existence of a concept was mostly used in the analysis, where necessary, frequency was also used to provide a comprehensive analysis.

Furthermore a choice for how many concepts to code for must be made (Busch *et al*., 1994-2012). This will determine the degree of flexibility shown when coding the data. A fixed number of codes or categories will allow the researcher to keep to a specific number of predefined codes without deviating from these codes. An interactive set of codes or categories, however, will enable the incorporation new codes into the coding scheme as this will allow important material to be incorporated into the research which could have a significant impact on the results of the research. The coding scheme utilised was therefore interactive, rather than predefined. This research, therefore, used an inductive approach, but was backed up with the theoretical framework of ANT. This ensured that the analysis was guided by the connection between the data and the research questions (Mayring, 2003).

The concepts of ANT provided the main categories going into the research. The main themes that emerged from the review of the literature, namely social, technology and process factors were put into perspective using the ANT categories as the guiding framework. Given the very contextual nature of knowledge, and that the academic environment is different from the corporate environment, the subcategories, or variables, which emerged from the research were developed inductively, rather than deductively. Even though the research utilised a deductive method of reasoning, from the theoretical concepts and the themes identified in the literature, a combination of deductive and inductive reasoning was utilised to identify the factors affecting knowledge sharing in the UoT of focus. Strauss (1987), as cited by Berg (2007:247), contends that the themes or categories in content analysis can be derived inductively, deductively or by using a combination of both. In a deductive approach, the researcher will use categories that have been suggested in the literature (a theoretical perspective) (Berg, 2007:246), which has been used in this research. However, this research also attempts to present the perceptions of the population, which would rely on induction (ibid.) As Berg (ibid.) puts it, “induction should not be undertaken to the exclusion of deduction”. Therefore, the hypotheses about knowledge sharing factors in the literature should be given due consideration.

In addition to the interpretive and exploratory benefits to content analysis, the more generic benefits pertain to its cost effectiveness and the minimal requirements for materials for analysis. The only real limitation of content analysis pertains to locating relevant messages for analysis (Berg, 2007:259), which is mostly applicable to a study that utilises content analysis as a research strategy, rather than an analysis tool, such as in the case of already recorded messages. This research, however, analysed interview data, which is not at risk of

such a limitation. Content analysis is also ineffective in testing causal relationships between variables, but that is not the intention of this research.

4.11.3. Reliability and validation

According to Silverman (2006), a reliable study is one that can be repeated in another place and time and would bear the same results. He offers some measures that can be used to ensure that a qualitative research of this nature can be conducted in a reliable manner, including a detailed description of the research processes undertaken, which is outlined in section 5.2. Secondly, it must be explicitly shown in the research report the observations made which led to the results, and this has been undertaken in this research where inclusion of direct quotations were used in the analysis in section 5.3. Berg (2007:243) supports the use of excerpts, recommending at least three independent examples be used to show interpretation.

Reliability, according to Bogdan and Taylor (1998:9), is also dependent on studies that are "designed to ensure a close fit between the data and what people actually say and do". The research instrument is an important contributing factor, and the interview schedule was tested via a pilot study, ensuring its reliability. Secondly, the interviews were conducted by the researcher. This allowed for a better understanding of the data and the responses in its entirety and for probing where necessary for a deeper understanding in a face-to-face interview. Kruger and Welman (2001) recommend this for semi-structured interviews. Thirdly, the researcher transcribed the interviews to engage with the data and ensure an enhanced understanding of the data. Finally, the content analysis was performed by the researcher, and not an automated computer program. A computer program cannot accurately determine the nuances in a response or even what someone meant when using a certain word or phrase. The accuracy and relevance of this research was further enhanced by the fact that the researcher is employed as an academic staff member in the said institution. Being able to identify with the participants can influence the research results (Eagle, Hayes & Sibanda, 1999), but it only heightens the researcher's passion about the research and to explore the respondents' perceptions about knowledge sharing factors. According to Watt (2007), it is not only the participants' experiences that are an important contributor to the research process, but also that of the researcher.

The validity of interview data was assessed by correlations made with other responses given by the interviewee (Fowler, 1993:80), as well as the correlations made between data that feature in several places in the analysis. Validity was further enhanced by the transcribed interviews being subjected to scrutiny by all of the eighteen respondents for checking its validity. This ensured that the data used in the analysis did not contradict their views. Therefore validity was not only achieved through assessing correlations between responses

made by an interview, but correlations were made with the responses provided by other respondents and the validation of interview data that was used in the analysis. The systematic methodology also contributes to validating the findings (Clifton *et al*., 2006:102).

4.12. Constraints and limitations

The sample was taken from the faculty handbook for the respective faculties of the institution. The faculty handbook, however, in most cases only lists the permanent staff members employed in the faculty. This presents a limitation to the sample of the population to exclude contract staff members. The sampling method, though largely purposive, followed a snowball sampling technique at times as respondents were asked to recommend a qualifying staff member in their faculty or department to approach for participation in the research (Kruger & Welman, 2001:63). This increases the participation rate in the research and ensures that the units of analysis are data rich (ibid.). Snowball sampling is a branch of purposive, non-probability sampling and maintains the aims of this research. However, a limitation presents itself in as far as the selection of departments within a faculty is concerned. It would have been preferable to obtain a sample of one academic staff member from a different department within a faculty to offer a variation on the sample. In some cases this was possible, but with snowball sampling a participant was likely to recommend someone within the same department. As Beardsworth and Bryman (1999:292) point out, such a sampling technique would not generate a statistically representative sample, but then again statistical representativeness is only important if the researcher intended to generalise the findings. Furthermore, given the initial low response rate from the email invitations, the snowball technique would ensure a higher response rate.

The limitations in terms of data collection are applicable to the respondents' understanding of the concept of knowledge sharing. The researcher tried to prevent such a limitation from occurring by supplying the interview questions beforehand and by explaining the main concepts of the research and the researcher's perceptions of the research problem going in. However, there was no way to guarantee that the respondent fully understood these concepts and that each respondent understood it in a comparable way. Probing was used to obtain more detailed answers or for clarification of the interview responses and the respondents were guided back to the topic at hand when they deviated somewhat. Malbon (1999:313) recommends that the interviewer should allow the respondent to ramble or 'go off on a tangent', as it encourages insight into what the respondent perceives to be relevant. For semi-structured interviews, however, Malbon (1999:315) points out that a fairly clear focus allows more specific issues to be addressed. Kruger and Welman (2001) contend that with a semi-structured interview, the interviewer must personally interact with the respondent to obtain a better response, and obtain insight into the respondents view on what is important.

4.13. Ethical considerations

Prior to data collection, written consent, as presented in Appendix C, was obtained from the HR director of the institution to conduct the interviews with academic staff members. The email invitation sent to the sample, which appears as Appendix B, outlined the ethical considerations of the research, including assuring the participants of their anonymity, stating that participation in the research was voluntary, and explaining that the participants may withdraw from the research at any time and that the data collected via the research instrument will be treated with full confidentiality. Attached to the email was the consent letter obtained from the HR director of the institution, proving that ethical clearance was obtained prior to the data collection. Furthermore, the three staff members that were willing to participate in the research immediately after being invited to participate in the research were informed of these ethical considerations prior to the commencement of the interview.

No personal confidential data was collected during the interview, as this was not needed for the research. Only the level of tenure, department and faculty details were obtained for possible comparative data in the analysis of results of the research. Participants were informed at the commencement of the interview that they would be recorded and that this was simply to use as a measure for cross-referencing between the written responses and the recorded interview. All interview transcripts were transcribed immediately in digital format and stored on the researcher's personal computer which is secured with a password. The original transcripts were kept in a locked drawer in the researcher's office. The researcher transcribed the interviews to maintain confidentiality. All interview responses were recorded verbatim, except where the researcher has summarised the response to exclude any data that were not relevant to the research. Recordings of the interviews were transferred from the recording device to the researcher's personal computer on the day of the interview and removed from the recording device. After the completion and examination of the thesis, the transcripts will be destroyed and the digital transcriptions and recordings will be deleted.

The transcribed interviews were subjected to scrutiny by all of the eighteen respondents for checking its validity. This ensured that the data used in the analysis did not contradict their views nor was it manipulated to obtain a predetermined outcome. The identity of the institution is also kept confidential to prevent private information from being revealed and hurting the reputation of the institution.

The veracity of the information and results that are presented in the research is proved by the adequate, complete and proper referencing of all sources referred to in the research and the transparency of all the processes employed in the analysis of results, which are explained in detail.

CHAPTER 5: ANALYSIS OF RESULTS

5.1. Introduction

The previous chapter focused on the research approach applied in this qualitative research. This chapter will report on and discuss the analysis of the results of the qualitative interviews.

In this chapter the results of the interviews with the sample of academic staff members from a selected UoT are discussed. The data are analysed in respect of the research questions posed, exploring the categorisations and themes that have been obtained from the review of the literature and any other emerging themes that are revealed in the interviews, as well the concepts of ANT. The analysis concludes with a graphical representation of the findings depicted as a refinement of the original conceptual framework.

5.2. Process of analysis

Content analysis is defined by Devlin (2006:196) as "reductive systematic analysis of written responses that leads to some thematic categorisation". The following steps were followed to process and analyse the data, which are in line with recommendations made by Devlin (2006):

- The transcripts were read by browsing through all the transcripts as a whole. The researcher then noted any first impressions about the data.
- The responses were condensed into a list, organised by question. The researcher organised the data using Microsoft Excel. Each interview question was typed into a separate worksheet and each response was labelled according to the interview number. Columns for the interview number, faculty, level of tenure, gender, race, interview question response and code were created. The columns for faculty, level of tenure, gender and race were included for possible comparisons among subsets of the data. However, in keeping with Berg's (2007:251) recommendations, the analytic relevance of such traditional variables such as gender was not assumed, but only considered if and when the data showed it to be relevant. The list constituted a set of organised, raw data, known as the data set.
- The organised lists of data were then coded or categorised. This was done by reading the responses again, one by one and line by line, highlighting relevant words, phrases or sentences. This constituted the level of sampling. Berg (2007:244) suggests using one or a combination of levels of sampling of content. The issue of what to count was addressed next. The labels were based on the themes and the categorisations that emerged from the review of the literature or new, emerging themes. Berg (2007:247) refers to this as coding for concepts. Coding for concepts is regarded as one of seven different elements to code for in content analysis. A concept constitutes a variable in a

research hypothesis (Saunders & Pinhey, 1959:191). Coding for this concept involves looking for words grouped into a conceptual cluster (or idea). These words would have a strong link to the proposed concept. Berg (ibid.) suggests that this type of analysis tends to lean toward a latent content analysis, whereas coding for words, another type of coding element, generally results in quantitative, or manifest, coding for frequency distribution (Berg, 2007:246). The researcher used a combination of the two methods since there were some cases where themes and categories were explicitly represented by specific words and other cases where themes were identified through a collection of words which *meant* the same thing, but did not appear as explicitly. This is addressed in the following point.

- Holsti (in Bailey, 1982) indicates that the categories should reflect the purposes of the research. This was true for the research objectives, reflected in the research questions posed. Coding was dependent on:
  a) Something that was repeated in several places.
  b) Anything that the interviewee explicitly stated as important.
  c) Themes identified in the literature.
- The next step was to determine the rules for coding. This is strongly linked to 'what to count', addressed in the previous point. These rules are for identifying the characteristics of categories. The conceptualisation and operationalization must be based on an interaction between the theoretical and empirical observations (Berg, 2007:248). Theoretical observations were instrumental in being able to identify obvious characteristics for categories in the data. However, some form of inductive categorisation was required for those characteristics which are implied. This is where both inductive and deductive reasoning come into play. As Schatzman and Strauss (1973:12) point out, although some categorisation is worked out in advance and some is developed later, consistency is key in both. When categories were developed inductively, explanations, grounded in the data, were developed. As suggested by Berg (2007:243), the use of excerpts to document the interpretation made by the researcher, were used.
- The researcher created a set of subcategories based on the codes, which mapped to the main categories identified in the literature or emerged from the qualitative interviews.
- These subcategories were saturated until no other new categories, or variables, emerged.
- Once this was completed, the researcher grouped similar categories together to form abstracted categories, providing explanations of what these abstracted categories constituted.

- After identifying the categories, it was important to establish the links between the categories. This was grounded in the ANT.
- The categories and their relationships are represented as a general framework based on the initial conceptual framework in Figure 5.1 and represents new knowledge about the academic domain from the perspective of the participants in the research.

5.3. Analysis

5.3.1. What factors influence the enrolment of academic actors into a knowledge sharing actor-network?

It has been established in the review of the literature that effective learning through knowledge management is achieved when people, processes and technology come together (Armistead, 1999:145). These concepts were therefore considered together for the purpose of this research, as sociotechnical considerations for successful knowledge management and hence knowledge sharing. ANT has been selected as the underpinning theory to explore how these themes interact to create and sustain a knowledge sharing network in the academic environment. People, technology and processes were therefore considered to be the actors in a knowledge sharing actor-network. Furthermore, the framework of ANT enabled the researcher to explore the formation of knowledge sharing as a network of aligned interest through the four moments of translation. These four moments of translation, being *Problematization*, *interessement*, *enrollment* and *mobilization [sic]* (Sarker *et al.*, 2006:54). The success of the formation of knowledge sharing as a network of aligned interest would depend on the successful implementation of the four moments of translation. Therefore those factors which impact on the four moments of translation have to be considered for successful formation of the knowledge sharing (aligned interest) actor-network.

5.3.1.1. Focal actor

The formation of the actor-network is initiated by a focal actor; therefore a focal actor in a knowledge sharing network of aligned interest in the context of this research had to be identified. The general sense is that even though there are some knowledge sharing activities undertaken in the faculties, they occur in an ad hoc manner and hence there is no one driving knowledge sharing as an obligatory passage point (OPP). As previously discussed, the focal actor should define the OPP and should rally the support of the actors to align their interests with that of the focal actor through the application of the four moments of translation. The focal actor is considered the key actor as he, she or they must drive the process for creating the knowledge sharing network by forming alliances with the other actors in the network. The respondents' views on who would more suitably act as the focal actor are summarised in tables 5.1 and 5.2. The data are split according to nine respondents

who felt that one person should act as a focal actor and nine respondents who felt that the role of the focal actor should be a collective effort. The main variables that were identified from the responses of the academics were the HOD, subject coordinator, academics and management. Even though an HOD acts in a managerial role, there is a distinction made between an HOD and higher levels of management, including the HOS and the dean of a faculty. This issue, however, will be explored further under section 5.3.3.1 on punctualisation.

Table 5.1: Single focal actor

Focal actor	Number	Percentage
HOD	3	33
Academic	3	33
Academic and manager	2	22
Subject coordinator	0	0
Management	0	0
Don't know	1	11

Table 5.2: Collective focal actor

Focal actor	Number	Percentage
HOD/ Academic	4	44
HOD/ Academic and manager/ Subject coordinator	1	11
HOD/ Academic and manager	1	11
Subject coordinator/ Academic and manager	1	11
Management/ Academic	2	22

There were very few respondents, as can be observed from tables 5.1 and 5.2, that either did not know who should act as the focal actor or knew that someone had to undertake the role, but were not sure who that should be. They admitted the importance of nominating someone as the driver for the formation of a knowledge sharing actor network and gave preference to either management or an academic staff member. This person has been coined ‘academic and manager’. This person should be selected based on their suitability to the role, as indicated in the following responses:

> *An individual, not necessarily management, that is knowledgeable about the work in general, can liaise well with staff. This person should have skills at various levels, including teaching and management.* (Respondent 1)

> *Knowledge sharing should be driven by a person that already works in the faculty, in other words the role to drive knowledge sharing is in addition to their primary work. If their main job is to manage knowledge sharing, they would not have enough knowledge of their own about the environment.* (Respondent 3)

It should be a character idea, rather than a 'sticker' idea (Instead of just giving someone a title, it must be a part of who they are and they must identify with the initiative). (Respondent 5)

To report merely on the existence of these variables is not a satisfactory representation of the views of the respondents on this issue; therefore a quantitative representation would provide a comprehensive perception of the sample. Half of the respondents felt that the focal actor should not be one person, but it should be a shared role toward a shared responsibility, particularly due to the different levels of punctualisation that are possible. The structure of the faculty has been outlined in section 4.2.1. Given this structure, there were divergent views on the level on which a focal actor should be acting. Those respondents who felt that a focal actor should be selected on more than one level motivated that the knowledge that must be shared on different levels is different. There is knowledge that is shared between higher levels of management that must be filtered down to the lower levels and knowledge sharing on lower levels that must also be filtered up to higher levels. This view on the focal actor ties in with the respondents that view a person with both management and teaching knowledge as being suited to the role of the focal actor. This is because the knowledge shared at different levels collectively constitutes valuable knowledge in the knowledge sharing actor-network. This is also reflected in the views of those respondents who felt that we as academics should be responsible to an extent, while management are also responsible to an extent. This is reflected in the following statements:

HOD support is definitely required, but the HOD should not necessarily be the driver. Being a teaching and learning representative, you help to make decisions, but you can't enforce it because the departments are not interested. This limits your reach of influence. (Respondent 9)

The head of programme (should drive knowledge sharing). There should be one person to lead. At the same time lecturers should be responsible for their own 'space'. They can't expect the head of programme to run around after individuals for stuff related to their subject, you must look after your subject. (Respondent 10)

From my perspective (in this faculty), we as the lecturers, or specialist that will be standing in the class, should be the drivers and by our own motivation should share knowledge but this does not often happen like that . Seniors (HOD) must also drive knowledge sharing, and if it is not happening, they should motivate staff to share. (Respondent 12)

It should come from the individual academics, and maybe there should be avenues to filter this knowledge, first horizontally, and then vertically. HODs should be a guide for staff development. (Respondent 17)

Furthermore, those respondents who felt that only the academics or individuals should be driving knowledge sharing believed that as long as there is a platform for sharing, it does not need to be managed.

The findings pertaining to a shared responsibility tie in with the respondents' perceptions about the levels on which knowledge sharing should be undertaken. The overview of the case research reveals that there are several layers within the academic environment, including the institutional level, faculty level, departmental level and subject level. When presented with the question about the level(s) on which knowledge sharing should take place, 89% (sixteen) of the respondents felt that knowledge sharing should be undertaken at all levels. One respondent felt that knowledge sharing should be undertaken at the subject, department and faculty levels and the other respondent felt that it should be undertaken at faculty level. The general perception, however, is that the kind of knowledge shared at each level is different, where more general forms of knowledge are shared by management, more discipline-specific knowledge is shared on departmental or subject levels. Furthermore, sharing must occur between different levels within a subject and between service (supporting) departments and the academics. These views are expressed in the following excerpts:

> *Knowledge sharing must first take place in the department where academic staff are more comfortable sharing with their colleagues. In the departments, sharing must also take place in subgroups (like subject groups), and there should be sharing between different years, such as first, second and third-year subject levels. Sharing should also take place within the faculty, but this depends on the kind of knowledge that will be shared, as there must be a common interest because there are instances where topics discussed at faculty level is not relevant to all departments …There is, however, a breakdown in knowledge sharing between faculties and within the institution. This is because HODs typically meet at these levels, but fail to report back to their departments. They only share or report back on bad things or when something must be done.* (Respondent 4)

> *Knowledge sharing would not happen in parallel (at all levels). First sharing must take place within the department between colleagues that are doing the same thing that I do. A drawback to sharing through personal interaction is that it is not documented. If it was documented, it extends sharing to other departments. Inter-faculty sharing is required less frequently and inter-managerial (institutional level), even less frequently. There is a hierarchy to knowledge sharing, where academics share with the HOD first and this gets filtered up to higher levels of management.*
>
> *Knowledge sharing should happen at all levels. Yes, there is knowledge that is subject-specific, but there are also techniques, standards and levels of efficiency that should be shared at all levels, just general knowledge around professionalism.* (Respondent 5)

These statements also affirm the respondents' perceptions regarding the filtering of knowledge between levels, as pointed out previously, from management level down to academic level and from academic level up to management levels.

5.3.1.2. Problematisation

During the first moment of translation the focal actor must identify his or her interests by framing a problem. It is the shared interest which is defined as the OPP. In this research, that would be knowledge sharing. Unless academics share their view on the problems that knowledge sharing could help to overcome, a problem cannot be successfully framed. The focal actor must successfully rally the support of the actors to the extent that the actors are willing to align their interests with that of the focal actor. In a sense, the focal actor must know what academics are experiencing to frame a problem successfully.

The sense from the interviews was that the major problems that are experienced are as a result of the lack of accessible knowledge, constituting a lack of available knowledge resources and a systematic approach to knowledge sharing. This view is evident in the following excerpts:

> *Staff encounter different problems at different times for which they are seeking a solution . . . If a resource that provides solutions to problems is not available, staff give up or don't get things done, as it is too much of a hassle.* (Respondent 2)

> *Trying to find something on the MIS was a problem . . . I had to call someone and they directed me to the location of the information. This wastes time trying to look for relevant knowledge to do your job.* (Respondent 4)

> *At the very basic level, meetings take place to share knowledge, but academic staff get stuck on the same issues, and don't get through the entire agenda . . .There needs to be regular reviews of subjects in terms of the content and what industry needs. Communication is also important. Often there are people that attend meetings but do not say anything but might have something valuable to contribute. There should be workshops to strengthen communication.* (Respondent 9)

> *There is a lack of handover when a new academic starts in a job. Even though there is an induction process for new appointees, it is very generic and they talk about institutional-level processes, but this does not cover the work you must do in the department.* (Respondent 11)

> *The staff changeover (is a problem). When I started here, the person had already left, so there was no handover of information. You just get thrown in the deep end with a pile of papers dumped on your desk. A lot of basic info re how things run in a department is also not made available upfront, and you end up wasting time and getting frustrated asking questions about trivial things such as basic procedures regarding where to get a card to print. The basic procedures of how things run in the department.* (Respondent 15)

Some respondents attribute the lack of available knowledge resources to the lack of willingness of academic staff to share or a lack of interest in sharing:

> *We do have some workshops to share our approaches to our subjects and to assessment . . . Not many people attend sharing sessions.* (Respondent 8)

> *I'm new at [the institution], they have an issue with knowledge sharing, no one wants to share, and you must look for the knowledge yourself. People must understand that knowledge sharing is not for you, but for the success of the institution. By refraining from sharing your knowledge, you hold back the programme and your department.* (Respondent 14)

And one respondent attributes it to a lack of leadership:

> *There is also no sense of leadership.* (Respondent 11)

The consensus, however, is that knowledge sharing can address two broad problems, the lack of operational effectiveness and efficiency, and the lack of social cohesion. Operational effectiveness and efficiency is demonstrated as a variable in the following statements:

> *Staff don't share, they are holding on to their knowledge. Work inefficiencies occur as knowledge must be sought out from the same people who hold on to it. For example, if a student queries something, it always results in sending them to find the answer from someone else. There is a lack of collaboration between subjects for academic benefit of the students. This impacts on the effectiveness of teaching, as integrative projects cannot succeed.* (Respondent 3)

> *It would help me to be aware of industry needs, to be able to solve problems for industry at an academic level. Knowledge sharing would help me to determine the knowledge that is relevant, current and useful to people that employ the students. It will ensure that students can do what is expected from them. It would help me to stay current, especially in fields that rapidly change, such as computers.* (Respondent 5)

> *I feel we work in isolation. We are sending out students that will teach in different fields and often what you are dealing with is related to other subjects. I would like a forum to share what I do in my subject, to avoid repetition and students from becoming bored because what they are doing in one subject is similar to that of another. There could also be a clash between what is done between subjects.* (Respondent 12)

> *To prevent miscommunication, ignorance, avoid operating in isolation, when that happens, all kinds of maladministration can take place. So the aim should be counteracting duplication and wastage, and ensure efficiency.* (Respondent 16)

Work duplication is considered as a variable which impacts on efficiency. Therefore this variable has been considered as part of the broader theme of operational effectiveness and efficiency. Efficiency is also impacted by the lack of readily available knowledge resources, or systematic storage of knowledge. Ineffectiveness is largely impacted by the lack of collaboration, evidenced by a lack of communication regarding what academics are doing in

the same subject or on different levels of the same subject and integration between different subjects.

Social cohesion is defined by Stanley (2003:5) as "[t]he willingness of members of a society to cooperate with each other in order to survive and prosper". Stanley (ibid.) goes on to define willingness to cooperate as "freely choos[ing] to form partnerships and have a reasonable chance of realising goals, because others are willing to cooperate and share the fruits of their endeavours equitably". A lack of social cohesion in this context constitutes more specific variables such as a lack of trust and lack of communication. The following excerpts also serve to justify this theme:

> *Lack of communication that keeps staff informed about current work. This leads to lack of harmonisation. Communication should be deliberate. Often staff do not remember to update each other.* (Respondent 1)

> *People are not open. They are shy and think that they are exposing themselves if they share. For example, some staff are not comfortable with other staff coming to their classes, and it should not be that way. There must be constructive criticism and staff should be open to this. You must expose yourself in order to learn from your mistakes.* (Respondent 6)

> *You can't possibly have all the knowledge you need, so you can learn from other people.* (Respondent 17)

> *The areas that pertain to my area of work where knowledge sharing is important is training related to my discipline and teaching, even though I am the only one teaching in my subject, I still need to share knowledge.* (Respondent 18)

> *People must understand that knowledge sharing is not for you, but for the success of the institution. By refraining from sharing your knowledge, you hold back the programme and your department.* (Respondent 14)

The respondents want to know what their colleagues are doing, and this is an issue that stems from a lack of social cohesion:

> *With regard to students, throughput rates, and attendance – how do other academics address this and how do they deal with different students that we obtain every year.* (Respondent 13)

> *I feel we work in isolation . . . often what you are dealing with is related to other subjects. I would like a forum to share what I do in my subject, to avoid repetition . . . There could also be a clash between what is done between subjects.* (Respondent 12)

In light of these problems, the respondents were asked to offer their opinions on whom/what the actors in a knowledge sharing network should be and in some cases the respondents offered their views on their perception. As previously mentioned, the main actors in a

knowledge sharing network in the academic environment have been identified as the academics, processes and technology. Even though a case has been made for these actors to be part of the actor-network, the data revealed all the respondents felt that academics and processes should be part of a knowledge sharing actor-network in their context. Eighty nine percent (sixteen) felt that technology should be part of the actor-network. Of the two remaining respondents, one felt that technology should not be used, as he claimed that he is usually hesitant about technology and the other respondent revealed that it should be used, but on a management level, as it would be too time-consuming for academic staff. In support of the perception that academic staff should share their knowledge, as respondent 16 said:

> *If you are not willing, you should not be an academic, especially if it contributes to the smooth running of the department they work in because it contributes to the social and emotional well-being and operational effectiveness which is directly related to the sharing and utilisation of knowledge.*

Respondent 2 added:

> *Including people who work in support departments. In this way, support staff and academics can help each other to lead to overall improved efficiency and effectiveness.*

Several respondents added that there should be a platform for sharing in order for academics to share their knowledge. This is in direct link to processes and technology, as without these two actors, there would not be a platform for sharing. The respondents' views on processes include:

> *If there are no processes, it will not get done, because it is likely that someone is expecting someone else to do it. If knowledge sharing was integrated into the daily work, it would be expected from everyone to participate.* (Respondent 3)

> *For [knowledge sharing] to happen or else it won't happen, but depends on how we make it happen.* (Respondent 8)

> *Yes, if not, we may just as well close down. It is should be the life and soul of the institution.* (Respondent 16)

Some respondents also made reference to the fact that some knowledge sharing opportunities do exist in the form of meetings and workshops, which would constitute knowledge sharing processes. Furthermore, from the responses, technology is seen as promising in aiding with knowledge sharing, but should not be the focus of knowledge sharing. In other words, technology can complement knowledge sharing processes, but not all knowledge sharing activities should be undertaken using technology. Even though technology can help to enable easy access to knowledge and create a store of knowledge,

the respondents are concerned about the lack of personal interaction as a result of extensive reliance on technology. For example, respondent 17 expressed the following concern:

> *I think that's the in-thing. But it can result in a lack of interpersonal relationships. For instance, staff don't phone or visit, they just email when they need something. Technology is good, but there must be a good balance. At the moment email, for example, is the vehicle for all communication which is not good.*

Respondent 9 had the following to say:

> *It is a useful tool, but it should not be the beginning and end of knowledge sharing. I prefer to have a conversation than send an email.*

Some additional concerns regarding technology were expressed, including staff resistance, but these issues are addressed in section 5.3.3.5. In particular, respondent 12 made reference to age as a contributing factor in whether or not a staff member will embrace technology:

> *Yes, but certain age groups become nervous about technology, but once we are given the opportunity to get to grips with it, it can certainly bring advantages to our work.*

The researcher also noted the remarks made by a junior academic who indicated that she loved technology, whereas the respondent that showed an aversion to technology was older. These concerns, however, are addressed as issues pertaining to the stability of the actor-network, to be addressed in section 5.3.3.

A significant observation regarding problematisation is that fifteen (83%) of the eighteen respondents allude to process factors, while seven respondents allude to social factors and two respondents allude to technology factors. This means that these factors are implicit in the problems that they have identified. Table 5.3 below outlines examples of the coding scheme utilised to draw this conclusion, which were applied consistently to all responses.

Table 5.3: Coding scheme

Category	Code	Meaning unit
Technology	Lack of a technology-based resource or lack of suitable technology	"A FAQ facility should be available to provide solutions for these problems. If a resource that provides solutions to problems is not available, staff give up or don't get things done" "Trying to find something on the MIS was a problem because the steps to find it changed"
Processes	Lack of structure and opportunities to share	"There is no systematic manner of accessing that knowledge which is needed" "There should be sharing on technical knowledge" "There needs to be regular reviews of subjects in terms of the content and what industry needs"

		"Record keeping – if you are looking for a book or course work, what you need should be available within the department, there are things staff should know, basic things should be available and clear to new staff"
Social	Lack of communication and sharing	"Staff don't share, they are holding on to their knowledge" "Lack of communication that keeps staff informed about current work. This leads to lack of harmonisation" "There is a lack of social cohesion, which impacts on the level of sharing" "People are not open"

5.3.1.3. Interessement

Interessement is the second moment of translation, which involves convincing the identified actors to realign their interests with that of the focal actor, in other words, to pass through the OPP. In this context the realignment of interests would be to accept knowledge sharing as a way forward to address the problems identified in section 5.3.1.2 above. The actors, as previously explained, can be human and nonhuman actors. The human actors would be the academics and the nonhuman actors are processes and technology. This section will, however, focus on the human actors to obtain their views on what would be successful strategies of interessement. As Sarker *et al*. (2006:45) advised; the analysis of the process of translation should be examined from the vantage point of an actor whose perspective makes more sense within the context. Callon (1986) also emphasised the importance of the viewpoint from which the researcher will conduct the analysis. The academics were deliberately and carefully selected based on the value that they would add to a study of this nature. As such, the academic actors will help to define the role of the other heterogeneous actors in the knowledge sharing actor-network as they will utilise the technology and processes.

The main issue pertaining to interessement is developing a culture for knowledge sharing at the institution, and management support is the first step to developing and nurturing this culture. As respondent 2 pointed out:

> *There must be support from management; otherwise people do not want to participate.*

This statement coheres with the notion that there is no leadership where knowledge sharing is concerned. This is also affirmed by the following statement made by respondent 17:

> *Management say 'this is our vision' but we are just there to make it work, without knowing how to do it. There is no follow through on the plans by management.*

In a sense, the seriousness with which knowledge sharing is treated is contingent on management's commitment to it. The academic staff can gauge the level of seriousness based on the degree to which management supports the knowledge sharing actor-network. If

they feel that it is not taken seriously enough by management they will not expend the time and energy necessary to make it work.

Creating and sustaining a culture of knowledge sharing was also shown to influence the alignment of the academic actors with the knowledge sharing actor-network. A knowledge sharing culture was determined to be influenced by two main variables, including the appointment of a 'driver' of knowledge sharing and the nurturing of a sharing culture among academics, particularly at different levels, as staff tend to learn more when venturing out of their 'comfort zones'. This is a manner of working that is rather 'settled', and as such requires little effort, yielding results that are barely acceptable. The need for a driver of knowledge sharing was expressed in the following statements:

> *There needs to be persons put in place to drive knowledge sharing that are accessible (do not sit on the top floor and never interact with staff). They need to get a feel for what people are doing and what they need. This person acts as a 'collector'. It should not be intimidating to approach them.* (Respondent 1)

> *The faculty should have dedicated people to visit the faculties/ departments. A person that has been assigned to a specific area of work to engage with the academic staff and to ensure that staff know how to do the work they need to do.* (Respondent 14)

> *It must not just be an idea. For knowledge sharing to be taken seriously after gaining staff commitment, there must be a combination of a person and a platform in place.* (Respondent 3)

The respondents felt that there could be a culture of sharing if there were someone to initiate, drive and nurture knowledge sharing. However, it is not clear whether the driver should be at any specific level within the institution or faculty. This is an issue that permeates the interviews. The respondents also felt that a focal actor is indeed required and that the person to act as a focal actor does not have to hold a management position, even though the support of management is considered by the respondents to be important. A knowledge sharing culture among academics is also required, which is evidenced by the following statements:

> *Knowledge sharing is easier to do with younger staff members…senior people need to say that it's okay to share with them on an informal level; otherwise junior staff are not sure if they can share with them.* (Respondent 5)

> *If we openly discuss problems with each other, it must start at departmental level and then proceed to higher levels. That way staff feel that they are understood and feel free to share. It will eventually grow to other levels.* (Respondent 6)

> *Understanding of each other on a more personal basis, or personal interaction, and staff should want the department to succeed as a group, not as an individual. The department should run*

> *team building sessions to address issues and to ensure that we work as a department.* (Respondent 10)

> *I think the more we talk about it, the more we will motivate and encourage and open people's eyes to the benefits to avoid compartmentalisation. There is usually a common thread running through courses that must be considered and staff must show appreciation for someone's field as a result.* (Respondent 12)

A culture of knowledge sharing is influenced by the level of social cohesion. It was pointed out that this is a problem in the institution, and as a result there is a lack of trust and communication. These statements imply that by nurturing communication and trust, that is creating a culture of sharing, there would be higher levels of social cohesion. Another variable that would influence the level of sharing and hence the culture of sharing is creating an enabling environment. The respondents feel that there are many factors that impact on this variable which would influence their willingness to align with the interest of the actor-network. An enabling environment is contingent on time, environment, and manageability. In terms of time, the respondents highlighted workload and core hours as influencing factors. The concerns are around the administrative workload that the academic staff has to take on in addition to core teaching and learning responsibilities. The respondents also consider knowledge sharing to be an additional administrative task, which could impact on their willingness to pass through the OPP. The issue of core hours is outlined in the following statement:

> *Staff don't have a problem sharing, but because there are no core hours, this makes it difficult. The perception is that this is just a job, and it's 'my time', as opposed to viewing it as an academic environment where sharing on academic matters must happen. Bring in core hours. This has to be driven from the top. Incorporate core hours of 10:00 – 14:00. That way staff will not have made appointments elsewhere, and will certainly be available on campus during these times. Otherwise there are fewer opportunities to share, especially because not everyone is available.* (Respondent 4)

The issue of manageability can be understood in the following context:

> *Knowledge sharing should occur as small units of knowledge (e.g. after an assessment, prompt staff to answer a question about their experience or insight – knowledge sharing should be prompted, but should be manageable – staff should not feel overwhelmed by the task).* (Respondent 1)

The idea that staff should be prompted to share their knowledge implies that knowledge sharing must be integrated into the work processes. In doing so, the knowledge sharing experience is not seen as a huge task that must be undertaken at the end of the day, week or quarter, but sharing is split into manageable units that do not require a lot of time. There is

a strong link between time and manageability. The researcher, however, sees this as a process-related issue and will address this further under section 5.3.3.6. The environmental factors relate to the resources in general, which refers not only to the surroundings, but also technology:

> *Make it so that staff are more comfortable being around each other by creating an environment where you want to be and interact. . . The staff room should be an attractive environment where staff want to be and this will lead staff to talk to each other. For example, they should have comfortable couches, decent coffee, and a comfortable space with an Internet connection. Staff are more likely to be in the staff room than in their offices (silos). There could even be a departmental phone app to contact staff in the department to share something, but locked for certain staff only.* (Respondent 5)

The respondents feel as though the reluctance to share is linked to the lack of suitable resources to support knowledge sharing:

> *If a resource that provides solutions to problems is not available, staff give up or don't get things done, as it is too much of a hassle.* (Respondent 2)

Several respondents also highlighted the lack of structure as hindering any kind of knowledge sharing, contending that a structured system is needed. Structure not only pertains to mobilisation of the network, but also the knowledge sharing processes. In fact, the lack of structure, as per the respondents' views, pertains to technology and processes, including opportunities and platforms:

> *Relying on emails as a means for disseminating information or knowledge eventually leads to information overload, as there is no structure. There should not only be a resources facility like a wiki or FAQ, but there must be personal meetings or opportunities to meet.* (Respondent 2)

> *I'd like to know about bits and pieces of knowledge of what someone is doing and how they are doing it and to assess it to see if how they are doing things will work for me.* (Respondent 7)

> *When you look at faculty meetings, knowledge is available. So these meetings should also be held at departmental level regarding research guides, assessment and moderation, work integrated learning. These must be standardised. Committee meetings are also important for this reason. We need to have different input. Best practice in one discipline can be applied elsewhere, so we should not think that we know everything.* (Respondent 13)

> *It is important to staff, then it should be policy. There should be built-in structures and mechanisms to help optimise knowledge sharing, for example seminars, monitoring committees, report-back sessions, etc.* (Respondent 16)

> *Give staff the opportunity to share by creating a space for sharing, such as organising discussion sessions.* (Respondent 18)

Standardisation and policy is also highlighted as adding structure to knowledge sharing. This is an issue of mobilisation, which will be addressed under section 5.3.4

Incentives also materialised as a variable of interessement. Incentives for this context, were not monetary, but based on recognition and workload alleviation:

> *Other people don't want to share knowledge because they feel they are not rewarded. For example the distinguished teacher award encourages people to do their work better.* (Respondent 8)

> *Staff compensation should also be considered. For example, there are certain tasks that are not considered as part of the work load, such as being on the board of a professional body. You have responsibilities there which are not recognised. Compensation could be in the form of the assignment of a research assistant for three months for example. Being a member of a professional body also constitutes knowledge sharing, but between the institution and industry. This should be recognised.* (Respondent 9)

> *There should be incentives pertaining to research.* (Respondent 11)

Obtaining staff buy-in has also been classified as an incentive, as the respondents felt it was important to see what they were aligning with from the outset:

> *Management must achieve the buy-in from staff through meetings, presentations, etc. There must be a personal touch.* (Respondent 2)

> *Staff should be able to see the benefits upfront. In other words, you can see what happens when you do this. It should not be a pie-in-the-sky concept.* (Respondent 3)

The general sense pertaining to interessement efforts is that its success pivots on action rather than promise. The respondents' views on what would constitute successful interessement relate to what should be done or what is in place already. The statements about management following through on their plans or offering "pie-in-the-sky" ideas show that the factors outlined in this section need to be in place before interessement efforts are pursued.

5.3.1.4. Enrolment

After the interessement process, it is important to define the role of the respective actors in the knowledge sharing actor-network. Enrolment ensures that the actors have been assigned with specific roles and responsibilities so that their inclusion in the network is justified and so that the actors understand the significance of their role in the actor-network to sustain the OPP. The roles of heterogeneous actors must be defined. Inscription serves to cement the

enrolment of the actors and to ensure that the actors do not betray the actor-network. This will be addressed under section 5.3.3. This section will look at the factors that the respondents perceive as affecting their decision to share knowledge, providing insight into how to define the role of the actors in the actor-network. Even though processes and technology as nonhuman actors cannot provide input in this regard, the human actors can provide some response as to how these actors should be defined in the knowledge sharing network in order to enable their knowledge sharing activities.

From the human perspective, several factors were involved in the decision to share knowledge, which serves to define the responsibility of the human actor in the knowledge sharing actor-network. Two broad categories have been abstracted from these factors, including responsibility to the institution and personal development. The variables that underpin the category 'responsibility to the institution' are collective cognitive responsibility, reciprocity and benefits to the student. Collectively they constitute the academics' responsibility to their jobs and hence the institution. Collective cognitive responsibility is a notion that is derived from the concept of collective responsibility, defined by Scardamalia (2002:68) as "the condition in which responsibility for the success of a group effort is distributed across all the members rather than being concentrated in the leader". Collective *cognitive* responsibility is a derivative of collective responsibility, incorporating an additional facet of cognition. In an environment where knowledge production is a key element of a job, cognition should be considered in addition to practical aspects of work. In short, collective cognitive responsibility is "tak[ing] responsibility for knowing what needs to be known and for insuring that others know what needs to be known" (ibid.). The following statements serve to substantiate this variable:

> *I need to share, irrespective. It is not my knowledge, but [the institution's] knowledge, which I have acquired under my tenure here.* (Respondent 4)

> *At some point I had to get staff involved in the recurriculation process . . . The only way that I could get the job done was to get staff to share their knowledge.* (Respondent 9)

> *I've been at a lot of private institutions and what I've seen is that you will get left behind if you work in your own world.* (Respondent 13)

> *The availability of experts and expertise, especially for my discipline. It would not be effective if there is no one sharing their expertise.* (Respondent 18)

Not only is it necessary to be aware of the responsibility to impart knowledge, but reciprocity further enhances the experience of knowledge sharing when the sharer is aware of the benefits to themselves and the person they share knowledge with. Reciprocity in this context is simply the exchange of knowledge for mutual benefit. Reciprocity appears as follows:

I like to share with other people. I want to learn from them either through their criticism or them adding to the knowledge. The aim is to learn. (Respondent 6)

Also, if someone is doing good work that we can use in our situation, I would be interested in using it. I would like encouragement from others, it mustn't be forced. I feel that by talking to others, I will learn. (Respondent 8)

Our department does not work as a team, everyone is on their own. I think that other staff should do the same, as it can't be a one-way thing. The only way would be to have buy-in from all staff to make things easier for everybody . . . If we work together a little bit more, it will make everyone's lives easier. (Respondent 15)

Ultimately, however, the job of an academic is to be of service to the students. Both collective cognitive responsibility and reciprocity would inevitably lead to a better service to students through improved efficiency and effectiveness. The benefit to the student has been highlighted several times in the interview responses as a factor.

Personal development as an abstracted category constitutes recognition, personal growth, enjoyment in helping others and self-efficacy. These are factors which add to the personal and professional development of the academic. This is aligned to not only the personal satisfaction that an academic perceives to gain from sharing, but also the professional benefits that it will bring for the enhancement of their career.

Self-efficacy is defined as "people's beliefs about their capabilities to produce designate levels of performance that exercises influence over events that affect their lives" (Bandura, 1994:71), or in short, the extent of one's belief in their ability to complete a goal or task. In fact, a strong sense of self-efficacy can enhance one's level of accomplishment. Self-efficacy has been highlighted in the following statements:

With knowledge being shared, I would have more confidence in my job. (Respondent 3)

Growth, and the more knowledge you have, you become better at what you do. Academics always have to be a step ahead. (Respondent 10)

Personal growth has been highlighted several times in the interview responses, as well as enjoyment in helping others:

The development of social, emotional and cognitive skills and to get satisfaction out of helping and informing someone. Mutual enrichment, opportunity to network and interact on a knowledge level. (Respondent 16)

Want to nurture someone to be like me, so that if in future I am not there, my work and legacy must continue. (Respondent 6)

Learning something new or being reminded of something that you know (have forgotten). (Respondent 18)

Knowledge sharing reveals what you know and what you don't know. It helps you to realise your mistakes and what you can do to improve. It helps you to grow. (Respondent 14)

Recognition was mentioned twice by respondent 8:

Being recognised that I was able to come up with a solution and was part of crafting that solution.

Recognition, (for example the distinguished teacher award).

The enrolment of technology and processes as actors in the knowledge sharing actor-network is for the purpose of creating an enabling environment to share knowledge. This category comprises manageability, operational effectiveness and efficiency, and access to professional knowledge as variables. As previously indicated, the use of technology should not be the focus of knowledge sharing. This further substantiates the views of the respondents that the role of any process and technology in a knowledge sharing actor-network should be enabling and should be defined in response to the three variables outlined to make knowledge sharing manageable for the human actors, to ensure operational efficiency and effectiveness, and to provide access to professional knowledge. The issue of manageability is evident in the following statements:

Knowledge sharing should not take a lot of time (e.g. smaller units), like helping people, get things to work better, like a system that works – if knowledge sharing can achieve this, staff will be encouraged to share. (Respondent 1)

I'm very admin-focused and rarely find the time. (Respondent 17)

There is very little admin assistance, you have to do everything yourself. You basically have to be lecturer, admin person, photocopier person, everything. (Respondent 15)

The manageability aspect of knowledge sharing is closely related to the way that knowledge sharing processes are designed. Several respondents indicated that current workloads do present a constraint to knowledge sharing that would potentially impact on their opportunity to share their knowledge. If knowledge sharing is viewed as an additional administrative task over and above an already busy work schedule, it is unlikely that academics would be open to the idea:

> *We also get involved in a lot of other admin and just get by in order not to get blamed.* (Respondent 17)

If knowledge sharing is seen to be an additional task, it would be the first task to be given a back seat when the academics are under pressure to perform. This could also be viewed from the perspective of recognition. The only 'recognisable' form of work pertains to teaching and learning activities, and to research and administrative tasks. If knowledge sharing was given as much recognition as other teaching and learning activities are granted, academics would tend to value the knowledge sharing process more highly than they currently do.

Operational effectiveness and efficiency is impacted by access to relevant knowledge to ensure effective decision making. Furthermore, access to relevant knowledge must not be time consuming. Therefore processes and technology can contribute to ensuring operational effectiveness and efficiency, as implied by the following comments:

> *Less running around looking for this and that.* (Respondent 3)

> *Not wasting time, if you are going to try something that someone else has already done and has either succeeded or failed at then you can try a different approach. You would save time and you also get new ideas.* (Respondent 15)

Processes and technology also ensure access to professional knowledge through personal interaction and through technology-based applications that can create a store of knowledge and systematic capturing and access to knowledge:

> *There could even be a departmental phone app to contact staff in the department to share something, but locked for certain staff only.* (Respondent 5)

There is an overlap in the factors affecting interessement and what the respondents consider to influence their enrolment in the actor-network. An enabling environment and systematic knowledge resources feature prominently in both sections, and incentives features to a certain extent. The issue of incentives was addressed under interessement as a way to obtain alleviation from workloads. This resonates with the view of workloads impacting on the ability to share knowledge, considered as a process factor. Academics are enrolled in many different actor networks in the academic environment, including academic and administrative tasks. The workload would have an impact on the academic actor's betrayal of the knowledge sharing actor-network even after enrolment, unless this issue were consciously addressed when designing the processes. Furthermore, nonhuman actors can also betray the actor-network if their roles do not fit the needs of the human actors and particularly if they do not help to achieve the goals of the knowledge sharing actor-network, including the attainment of operational effectiveness and efficiency.

5.3.2. What factors influence the growth of a knowledge sharing actor-network?

Successful formation of a knowledge sharing actor-network relies on the adequate application of the four moments of translation. The actor-network, however, must grow to include new actors when necessary and the enrolment of actors must be sustained through various strategies which can prevent the betrayal of the heterogeneous actors. This section focuses on sustaining the knowledge sharing actor-network as one that is competing against other actor-networks in the academic environment. This section will address the enablers for knowledge sharing and sustaining knowledge sharing.

5.3.2.1. Knowledge sharing enablers

The respondents were asked about the enablers that will ensure continued support of the knowledge sharing actor-network subsequent to the formation of the actor-network. The main enablers have been classified as a structured system, technology, support and institutionalisation.

A structured system is one that incorporates processes, infrastructure and knowledge sharing platforms. Technology not only applies to the use of technology to support knowledge sharing, but also adequate IT support. Support pertains to management support, the selection of coordinator of knowledge sharing activities and training opportunities. Institutionalisation is achieved through standardisation, recognition and ensuring that there are opportunities and time to share.

The elements of a structured system are outlined in the following statements:

> *The processes to share knowledge should be in place.* (Respondent 1)
>
> *Infrastructure must be prepared as a way to gain the buy-in from staff.* (Respondent 2)
>
> *There should be meetings, and perhaps an invitation to staff to share their ideas or something new with other staff, as we like to share and we enjoy it.* (Respondent 7)
>
> *Progress meetings should be held within the department on the development of knowledge sharing.* (Respondent 10)
>
> *When a new staff member arrives, there should be an instruction manual that will cover procedures such as exam processes, printing notes, how to apply for funding, etc. All of those little things, they just assume you should just know.* (Respondent 15)
>
> *Organise a set of themes or topics to discuss on certain occasions such as via workshops or seminars and nurture a culture of sharing.* (Respondent 17)

The processes establish the structure and opportunities to share, as previously substantiated. Infrastructure and platforms pertain to the methods for knowledge sharing. Those suggested by the respondents include meetings, workshops and manuals. Infrastructure can also incorporate technology. Technology as an enabler emerges as follows:

> *There should be a paperless system.* (Respondent 1)

> *There must be technology that works and it must be in place before gaining staff commitment.* (Respondent 2)

> *Again, if I use the example of the learner management system – it fits my philosophy to reduce my carbon footprint and it saves me time and reduces my administrative work, so should any knowledge sharing platforms that are in place. If it can satisfy these requirements, then it will fit my needs.* (Respondent 12)

IT support emerges as follows:

> *In terms of technology, there must be permanent people in place to ensure that it works and to monitor the system. People continuously complain about printing issues, the network issues and problems. This creates an attitude toward the technology. If there is appropriate support in place, it will garner staff support.* (Respondent 6)

> *For example, with e-learning, if you want to know anything or get anything to work, you have to go and find out about it or sort the problem out. There should be someone to take responsibility for how things are working. For example, the IT technicians are not working within the departments, they are sitting together away from the departments and do not take ownership over what is happening in the departments. This should be decentralised.* (Respondent 14)

Management support is important to the respondents, as it has been raised as an issue pertaining to interessement, and is also required to ensure the sustained interest of the academics in the knowledge sharing actor-network:

> *Also, there is a disconnect between the institution and the goals of the academic staff…This shows the disconnect between what we as academic staff want to achieve and what the institution wants. When you are trying to help you get cut off at the knees.* (Respondent 9)

> *There should be a person with a 'listening ear'. If knowledge is to improve the way that we work, then people should be 'listening', particularly those that have the influence to effect change . . .There should be a comments or complaints facility which leads to change.* (Respondent 1)

A coordinator of the knowledge sharing activities is required in addition to management support:

> *Without a face to the initiative, the ball won't get rolling.* (Respondent 3)

However, apart from it being driven by the HOD, nothing else. (Respondent 7)

New things can also be brought in at the departmental meetings. Then the HOD takes it to the committees. Not everything will be applicable to all departments, but it should be on a 'take what you need' basis. (Respondent 13)

The coordinator is the person that drives knowledge sharing. He/ she is the go-to person that academics feel comfortable to approach regarding knowledge sharing activities, and is someone that they can trust to take their message forward. They are an intermediary between the academics and management, and the pioneer of knowledge sharing to obtain the buy-in from existing and new academics:

People do not share because they haven't been asked. (Respondent 8)

Support is also needed in the form of training:

Staff also need to be prepared in advance on how to use the tools. (Respondent 2)

There must be someone to pioneer any technology or platform that is implemented. This will ensure that there is ownership over how staff are feeling about it and whether it is working. (Respondent 14)

There should be pointers to the structure – give people what they need and tell them how and where to find it. (Respondent 1)

Training not only applies to the use of technology, but all infrastructure and methods used to share knowledge, including knowledge sharing processes.

Institutionalisation is achieved through standardisation, recognition and ensuring that there are opportunities to share and time to share. Standardisation is achieved through consistency. In other words, knowledge sharing should become the norm. Standardisation emerges in the following statements:

If there is a culture of sharing, this will enable people to share freely and will support openness and discussion. (Respondent 18)

It must be organised, not happen in an ad hoc manner. (Respondent 17)

By keeping knowledge sharing standard. It should be a standard item on an agenda, this way it will always be discussed. If it is not standardised, nothing will be discussed. (Respondent 13)

As previously stated, the respondents felt that unless knowledge sharing is considered as important as other academic processes, it will not be taken as seriously and will be deprioritised in favour of other 'recognised' responsibilities:

Recognition – that we're doing some good work but won't guarantee that people will share. (Respondent 8)

The institution should take a lesson from a company like Google, where staff are allowed space in their day to work on their own projects. This can't happen with a heavy work load. It must be scheduled. (Respondent 5)

Creating a space for knowledge sharing and designing processes to encourage sharing will grow recognition for its importance in working towards a combined wisdom of the institution. Opportunities and time to share will encourage recognition of its importance:

Knowledge sharing opportunities must be timetabled. (Respondent 4)

The workloads should be considered more realistically. (Respondent 9)

Usually there's no time to attend, say, meetings, even though you are interested. I don't know what must be done, but there is a massive knowledge gap to be filled. (Respondent 11)

The people in charge should create a space, time and opportunity to share. There should be constant, regular interaction between all staff (including management), and it is important to have meetings with admin staff too on issues impacting academics (like assessments). (Respondent 16)

Institutionalisation is necessary to change the mind-set of academics to create and sustain a culture of knowledge sharing. A culture of knowledge sharing emerges through conformity. A structured and well-established system can help to foster a knowledge sharing culture.

5.3.2.2. Sustaining knowledge sharing

Once enablers are in put in place to ensure that the actors maintain their alignment with the actor-network, this alignment must be sustained. As previously mentioned, many actor-networks exist in parallel, competing for resources. To prevent the knowledge sharing network from fragmenting, actor loyalty must be maintained. When posed with the question of how a knowledge sharing actor-network can be sustained, the respondents revealed four main categories that encompass sustainability. These main categories include review, leadership, accountability and institutionalisation.

The review category is centralised around issues of measuring effectiveness of knowledge sharing. The respondents felt that if knowledge sharing is found to deliver tangible benefits, this would encourage sustainability of knowledge sharing:

A means to measure effectiveness of knowledge sharing, such as performance measures (like pass rates or other). Contributors should be able to check these and sharers should be able to rate management based on their responsiveness. (Respondent 1)

> *Knowledge sharing for the sake of knowledge sharing is not enough – it should be of benefit to the students. Sharing with the students on knowledge you have picked up on can improve your subject.* (Respondent 5)

> *If you are at a university, anything that you do should be research driven as a means of continuous revision . . . There must be a culture of continuous reflection and review of strategies to carry forward new knowledge to share.* (Respondent 12)

> *Regular reflection on what goes wrong and what goes right and how can things be done differently.* (Respondent 16)

Management also plays a significant role in the effectiveness of knowledge sharing, as the respondents felt that unless management is 'listening' to effect change, their role is not effective. Management need to review knowledge sharing strategies to ensure that systems are responsive and not rigid.

Leadership has featured prominently in the interviews as having a significant influence on knowledge sharing at its inception, but also proves to have an influence on its sustainability. Leadership manifests in various ways, including ensuring consistent awareness of knowledge sharing:

> *Consistent awareness of the need to share knowledge.* (Respondent 1)

> *Management must drive the buy-in of staff all the time. The network of knowledge sharing cannot grow by itself unless management continuously nurtures it.* (Respondent 2)

> *We need a strong person to drive the knowledge sharing – the right person that understands the processes and it must be pitched at different levels to different departments.* (Respondent 9)

Nurturing and encouraging knowledge sharing activities:

> *We need encouragement to deal with issues to prevent knowledge sharing from stagnating.* (Respondent 12)

> *Try to inspire people, as that keeps you going, motivation.* (Respondent 13)

> *The people that I spoke about that should champion the knowledge sharing in the faculty – a representative for each pillar must motivate the staff.* (Respondent 14)

Being an example:

> *You need a strong HOD, good morale between staff. The HOD must set a precedent for what is expected, and what is okay, and what is not okay. They should have good leadership otherwise individual people only end up doing the right thing.* (Respondent 15)

Accountability, according to the respondents, applies to the academics. Their view is that if the academics are not held accountable, they will continue to operate in their 'comfort zones', and hence a knowledge sharing culture cannot exist:

> *People should be rotated, as people want to stay in their comfort zone. New area, new knowledge to share. Being in the same position for long gives you the idea that you don't need to learn anything else.* (Respondent 6)

> *Responsibilities should also be rotated so that others have a good idea about how it works.* (Respondent 10)

> *There should be accountability for one's actions so a good idea is to link knowledge sharing activity and participation in performance reviews.* (Respondent 17)

The rotation of duties includes changing the subject coordinator, teaching different subjects or working in different departments, for example. This is an implicit way of ensuring accountability. A more explicit way is to incorporate accountability in performance reviews, by reporting on knowledge sharing levels and activities. Accountability prevents a situation where someone that holds an important position for a long time, and prefers not to share knowledge, cannot hold onto important knowledge acquired under their tenure and leave with this knowledge before it has been passed on.

Institutionalisation in this context is a collective term to represent the commitment of management in the form of several different areas, including explicit and implicit levels of commitment. Explicit ways to institutionalise knowledge sharing would be to implement strategies for knowledge sharing and also to implement changes in response to knowledge shared about improvement. Training also features as a way to institutionalise the initiative through implementation. The respondents felt that this would cement the commitment to the initiative. In doing so, the implicit forms of institutionalisation will result, including developing a social-networking culture and maintaining structure. Implementation is expressed as follows:

> *There must be implementation.* (Respondent 1)

> *Make knowledge sharing processes part of the main operational processes by integrating it. That way it won't just be a 'new thing' for 'now'.* (Respondent 3)

> *Matters arising in meetings perpetually stand over and do not get sorted. If these matters are addressed, staff will be more motivated. The institution should go to other institutions and see how they work.* (Respondent 14)

> *Put staff through formal teaching courses, as they will learn what good methods of teaching are. Most academic staff are not true academics, but a person of their field. If they understood that*

knowledge sharing can be part of what constitutes 'good practice' then they will do it. (Respondent 9)

The implicit levels of institutionalisation are manifested as follows:

If it becomes part of your work environment, it will naturally sustain itself and if it is a generally accepted thing. Having shared offices and social get-togethers makes it easier to meet up with colleagues, rather than those who are alone in an office, which is locked most times and they leave straight after their classes. When you have opportunities to interact, you can swop experiences and what's happening. (Respondent 7)

It should be part of how we work in day-to-day operations, as it is not only you that knows everything. How I operate is impacted by how other people operate. (Respondent 8)

It should be structured, a way forward. It must be split up in terms of areas of interest – so you share based on what you are interested in. (Respondent 11)

The main thing is team work and networking. (Respondent 16)

Weekly or monthly meetings will create a culture of sharing and will increase that sense of sharing between staff to create a knowledge sharing platform and to sustain knowledge sharing. (Respondent 18)

As mentioned, a culture of knowledge sharing can emerge through institutionalisation. A culture of knowledge sharing, or culture of social networking, is achieved through the structure that is offered by institutionalisation. The findings related to the sustainability of the knowledge sharing actor-network align with the findings reported as enablers. There is an overlap in terms of leadership and institutionalisation factors.

5.3.3. What factors influence the stability of a knowledge sharing actor-network?

This section uncovers the issues that may negatively impact on the actor-network strength. In order to recommend strategies aimed to strengthen relationships within a knowledge sharing network, the factors that impact on the stability of the knowledge sharing actor-network must be explored. The stability of the actor-network is called into question when a heterogeneous actor betrays the actor-network. For human actors these are usually social factors, particularly when the actor-network is rigid and does not change in response to varying circumstances or environment, which is referred to as irreversibility. Nonhuman actors can have an enabling or restrictive role in an actor-network, depending on their enrolment. It is this restrictive role that will be explored, as any nonhuman actor that does not fit within the environment will restrict the aims of the actor-network. Stability factors will be explored in terms of punctualisation, power issues, competing networks and human and

nonhuman factors. Nonhuman factors have been divided into process and technology factors.

5.3.3.1. Network of aligned interest punctualisation

Actors within an actor-network or network of aligned interest may be punctualised. This means that heterogeneous actors within a network can be grouped together based on similar interests in order to reduce the complexity of the network. The potential problems with punctualising actors are that individual actors within a punctualised actor-network may develop interests different to that of the actor-network and the interests inscribed in the punctualised actor. Often this is because it is 'assumed' that the individual actors within a punctualised actor will conform to the interests inscribed in the punctualised actor. This could lead to the disintegration of an actor-network. (Sarker *et al*., 2006:54, 70). It has already been established that there are different kinds of knowledge that are relevant at different levels. However, it is still to be investigated as to whether this means that the actors within an actor-network should be grouped together at higher levels.

When presented with the question of centralising knowledge sharing, the respondents' views were divergent. Six respondents felt centralisation would have a negative impact and three respondents felt that it could be positive, while a majority of nine respondents felt that it could be both negative and positive. This was because centralisation was found to encompass four salient themes, which emerged based on the respondents' views on what should or should not be centralised. The themes included the kind of knowledge, the level of control, the knowledge resource and the centralisation of processes.

In terms of the kinds of knowledge, the respondents felt that only that kind of knowledge which applies to all academics must be centralised. More specific, discipline-oriented knowledge must not be centralised. As pointed out by the respondents:

> *It depends what we're trying to share. If it is sharing at the institution level, then it must be relevant to all. Anything that is discipline-specific should not be centralised.* (Respondent 8)
>
> *Centralise knowledge that impacts on everyone. Decentralise that knowledge which only pertains to certain people.* (Respondent 4)
>
> *It would be fabulous, but it depends – some things should be centralised or standardised from there it should be split by department or discipline so that you are not feeding knowledge that other people don't need to know.* (Respondent 11)
>
> *It depends on what knowledge. If it is academic knowledge (discipline-specific knowledge), the only those within the discipline can manage that knowledge.* (Respondent 18)

Centralisation of control is seen to be negative, expressed in the following statements:

> *I'm two-minded here – on the one hand we need a continuous flow of knowledge we want to pass on within the university. However, I'm also of the opinion that someone that drives this will force us to share knowledge. It must not be an exercise in admin (or window dressing). Knowledge must be dynamic and people want to push admin to the point that it is a burden. For example, we were audited recently, and we were required to compile files that documented what we do in our subjects. However, no one else ever looks at these files.* (Respondent 12)

> *It can be abused, but in all cases it can anyway, but it is there to share, shouldn't be kept. It depends on how it is managed.* (Respondent 13)

> *The person put in place to run the knowledge sharing initiative might not be competent…It should not be kept in the hands of one person but should be accessible by staff to update as needed and also enable searching.* (Respondent 1)

> *Negative. You lose direct contact with the HOD. It's like going a step further away. People start acting like power maniacs. They usually just start instituting systems.* (Respondent 7)

The respondents' views on the centralisation of knowledge sharing processes reveal that it is not ideal, which corresponds with their view about the level of control:

> *The only thing that should be centralised is management support, not processes.* (Respondent 2)

> *Centralising can be a bad thing. For example, there is a quality department that collects the student evaluation forms for capturing, but we don't receive any feedback from them. I would rather prefer to have a conversation with my class about how they are experiencing my subject. I have first-hand feedback and I draft a report based on this. Centralisation in the sense that the institution oversees knowledge sharing and controls how knowledge is filtered down, is good.* (Respondent 9)

> *It can be both positive and negative. On the negative side, people don't want to mix, and this would mean that they must come together. On the positive side, you will learn a lot and grow.* (Respondent 6)

Furthermore, with regard to a knowledge resource, or systematic store of knowledge, the respondents felt that this must be centralised. The respondents advocate for a centralised resource for knowledge sharing, such as a knowledge based system:

> *Knowledge needs to be structured in a formal knowledge base with intelligent agents to improve access to that knowledge. Higher levels can enforce structure, which is achieved through centralisation.* (Respondent 5)

> *Centralisation should only be applied to the location and access to knowledge.* (Respondent 4)

There should be a system that is institutionalised and publicly available across the institution like a Wiki (public domain), that is self-regulatory. (Respondent 1)

The respondents revealed their concerns that knowledge sharing within departments would depend on the culture of the department, each of which has its own particular culture. The support from management is significant in driving knowledge sharing but the degree of control must be administered from the faculty level for certain kinds of knowledge that pertain to the entire faculty and to the respective heads of departments for more specific knowledge. Some respondents did, however, show a desire to share between faculties. This would of course not be discipline-related, but would involve knowledge about how things are done as well as knowledge about new and innovative ideas. As pointed out in section 5.3.1.1, the view of some respondents is that control should not be an issue if there is a platform for sharing (or processes). Once systematic ways to share knowledge are established, knowledge sharing should become self-sustaining.

5.3.3.2. Power issues

Power issues present themselves as a threat to the stability of the actor-network in terms of the role of human actors and the influence of organisational structures. The interviews have revealed that there is a link between the level of punctualisation and the power issues that could emerge out of punctualisation. Seventy-eight percent of the respondents (fourteen) indicated that power issues are immanent in a knowledge sharing actor-network. Three respondents felt that it was possible, but not a certainty that power issues could arise. Only one respondent did not feel that power issues would come into play. The interview respondents, however, revealed three variables that would generate power issues that could undermine the knowledge sharing actor-network. These variables are centralisation, self-preservation and politics. Centralisation is a variable that relates to organisational structure. In the event that a punctualised actor is formed, with higher levels of management controlling the punctualised actor, power issues could erode the actor-network:

Centralising would lead to power issues. In particular there are power issues between academic staff and from admin support staff too (supporting departments). (Respondent 2)

Power issues will always be there and needs to be addressed somehow. Establish a situation where these issues won't come up, such as letting sharing happen lower down where sharing issues is not a problem, as opposed to where it could be a problem, such as at management level. (Respondent 5)

Top-level managers are like dung beetles. They control and protect their work, even if it was a collaborative effort, they take credit for it. It will eventually filter down to other staff and everyone will start doing it so that they are also able to gain recognition. (Respondent 9)

> *It will have an influence. In our department there are management that have these issues, yet they do not teach so they do not know what we need.* (Respondent 10)

Self-preservation relates to one's need to protect knowledge. This would lead to a limitation in the extent to which people share and impact on their willingness to share:

> *People want to run everything themselves out of fear of being challenged or their value is tied to how much control they have. A self-sustaining and self-regulatory system eliminates power issues.* (Respondent 1)

> *Ideally, this should not be an issue at all, but some people are protective, each man for himself, or self-preservation. They want to make themselves indispensable. They should not feel threatened to share their knowledge.* (Respondent 3)

> *I have come across this personally. When you are enthusiastic about research and teaching, for example, and you share your ideas in a forum, then to your horror, realise that someone has taken your idea and reaps benefits from it. It's nice to be acknowledged and knowledge sharing must be used but if it is used, acknowledgement must be made of those who have shared their knowledge.* (Respondent 12)

Politics in this context relate to a person's desire to improve their status or increase their power in the institution. Politics as a factor come into play in terms of the driver of knowledge sharing activities, such as the focal actor:

> *It has got everything to do with power, as we are operating in a dynamic environment and you're working with people, so there are push and pull factors (politics), which can either create a negative or positive environment.* (Respondent 16)

> *It would depend on who heads it up. If someone is heading something they want to run it their way, even if other people offer their guidance, goods ideas get ignored.* (Respondent 6)

> *It could if people with power end up exerting their power, using power to enforce knowledge sharing, for instance. This just ends up in forcing people to do it, which should not be the case because it should happen naturally.* (Respondent 8)

> *Yes, people who like power often are more into power than progress. They would be more interested in exerting power than moving ahead.* (Respondent 7)

Power issues are emergent at various stages of the formation of the knowledge sharing actor-network. They can emerge when the focal actor is determined, at the time that punctualisation is determined, or at the time that the actors align with the actor-network. The respondents are concerned about a number of factors, namely: the focal actor enforcing a political agenda, the level at which knowledge sharing processes are incorporated

(punctualisation), and that their colleagues would be apprehensive to share their knowledge and limit the kinds of knowledge shared. As respondent 4 pointed out:

> *You get this is every department. People don't share knowledge and we start the processes again when they leave. You have to pull the knowledge out of people. They need to know that they are valuable to the institution. It is a mind-set. It is only 'pure' academics that share their knowledge.*

5.3.3.3. Competing networks of aligned interest

Usually there are several different actor-networks competing for resources in an organisation. The respondents were asked to report their views on what factors in their work environment would impact on their willingness and the opportunity to share their knowledge. Two broad themes emerged, including the level of social networking and time. The level of social networking has an impact on the respondents' willingness to share their knowledge:

> *The environment and culture would also impact on knowledge sharing. There must be a nice strategy for knowledge sharing that takes culture into account.* (Respondent 2)

> *Staff attitudes - in other words, whose responsibility would it be? (Staff usually just say 'so and so' can do it) The HOD attitude is also important, if there is not support, nothing will happen.* (Respondent 9)

> *A negative environment could impact negatively on me sharing knowledge. People must see that we are here for the same goal. The cliques and negativity is my challenge. They don't share unless they have a relationship with you. They inhibit you by not sharing. We should have one goal in our department. I won't sabotage anyone.* (Respondent 11)

Time impacts on their opportunity to share knowledge in the following ways:

> *Too much admin work. By shifting the responsibility to support departments or automating certain processes such as registration (or the automated update of MAS lists from Blackboard). Time constraints in meetings limit the level of sharing (long agendas or poorly run meetings where everyone wants to add to the discussion, sometimes prohibiting others from sharing. There are sometimes limitations to sharing based on those with a work in common and lack of a common tea break.* (Respondent 1)

> *Time constraints, deadlines, admin, the academic is inundated with silly stuff.* (Respondent 4)

> *Time. But it depends on one's timetable and amount of preparation, or whether they are on contract. Some people teach more than one subject or have to a prepare for a subject they have not taught before or are familiar with. That's why it's up to the HOD to make a plan.* (Respondent 7)

Workloads are very high and one of the restrictions to making time to share. There are always so many new things to consider and you are constantly trying to keep up. If there is a scheduled meeting, where a time is set, this would be better. (Respondent 13)

There is also no workload model. You just do everything, including all the admin. You are the secretary and the academic. There needs to be a workload model that can incorporate knowledge sharing and one that does not overload us so that we have time to share knowledge, otherwise we are overloaded with jobs we should not be doing. For example, with part-time lecturers, who checks their quality of work? You have to do that. What is a subject coordinator? No one knows what this job is. You just have to take responsibility for everything. (Respondent 14)

We are overburdened with lectures although they say you need to be 'wise' about how to teach the curriculum, but it is already worked out, how can you reduce it further? They need to bring in more manpower. (Respondent 17)

The feeling from the respondents is that there are many aspects to the job of an academic that require their time and energy. It would be difficult to maintain their alignment with the knowledge sharing actor-network if their colleagues are not doing the same:

Some people work hard and others are lazy, so I'm not going to give someone my notes that I spent hours preparing, it's got to be a collaborative effort. That is dependent on the type of person you are. (Respondent 15)

Furthermore, if knowledge sharing is simply 'added' to the already saturated workloads, then this will certainly pose a threat to the stability of the actor-network as the academics already place priority on their core responsibilities. This has already been established given that knowledge sharing as it currently stands is not recognised by the respondents as a core responsibility in as much as any teaching and learning activities are.

5.3.3.4. Human factors

Human factors of betrayal in the context of the research pertains to the personal factors that the respondents perceive as impacting on their willingness to share their knowledge. These are factors that could lead to the human actors betraying their alignment to the knowledge sharing actor-network. In other words, if a human actor perceives these factors to emerge at one point or another, they would abandon the actor-network. Eight respondents purported that they do not harbour any personal factors that would prohibit them from sharing, while the rest of the respondents revealed factors that are in alignment with those factors previously revealed. The factors include a lack of trust:

There's some people that you just can't share with. In order to share knowledge, you need to first build relationships . . . You must first build trust. Once you are able to gain someone's trust,

they trust your knowledge. When they trust you, you can also say 'I don't know', and that would be okay, and this will encourage others to help and share. (Respondent 4)

Engineers want to project a certain level of professionalism. They are more inclined to share successes than failures, yet you learn more from failures. You must be confident in yourself to do that. (Respondent 5)

Lack of recognition has also been highlighted:

The fear of your sharing not being appreciated by staff and management. (Respondent 1)

I'm sensitive to recognition of ideas and sharing (especially the time spent on it). I don't like being ignored if I have a good idea; I'm very sensitive to that as well. (Respondent 12)

The level of participation of colleagues is also a factor:

I do not like when responsibilities just get added because I have always said yes. Now I have a new motto for this year, learn to say no. At the moment I can't think of any personal factors that would prohibit me from sharing, however, if I take it on, and end up being the only person on which it rests later, then I will have an issue with it. (Respondent 3)

My only thing is I'm not willing to do the job of other people lazy as well. (Respondent 15)

I do not have personal factors that would inhibit me from sharing, as long as my colleagues are also sharing. If they don't share, what is the point. (Respondent 18)

Once again, level of support from management also featured as a factor:

If there is enough encouragement and support from management, it will assist one to rise above the issues. (Respondent 2)

Not everything that I do shows as part of the workload, only what appears on my timetable, so the work just piled on. The HOD must show support by give and take. (Respondent 9)

There is an overlap between the personal factors reported here to hinder knowledge sharing and factors that emerge as important during translation. The lack of social cohesion as a factor of problematisation features here as the level of participation in sharing by colleagues and trust. Management support has featured as a factor of interessement and recognition as a factor relating to the abstracted category of personal development under enrolment, but is also considered as a perceived individual benefit for passing through the OPP, as outlined in the general framework in Figure 5.1.

5.3.3.5. Technology factors

Nonhuman factors that impact on the stability of the actor-network include technology factors. When the role inscribed in technology does not conform to the needs of the actor-network, it could betray the actor-network. The broad themes that have emerged as the factors relating to technology that would impact on the stability of the actor-network include: the lack of or insufficient amount of knowledge sharing IT resources, insufficient IT support, technical difficulties or accessibility to IT resources, task technology fit and skill in using IT resources.

The general perception amongst the respondents is that there simply are not enough suitable technology-based resources to support knowledge sharing, and those resources which exist are fragmented:

> *The lack of technology is an issue. We do not have it in the first place and we struggle with old technology that does not even work. There is not enough technology to support staff.* (Respondent 10)

> *The facilities here are shocking, we are way behind what schools have, and we could do so much more with better technology.* (Respondent 15)

Furthermore, the respondents feel that technical difficulties and problems related to accessibility further exacerbate the problem:

> *The major issue concerning technology is the lack of reliability.* (Respondent 2)

> *When technology does not work, it creates a barrier to sharing, as it is useless.* (Respondent 4)

> *The availability of the network is also an issue. One becomes frustrated with trying to access resources until you just leave it.* (Respondent 8)

Accessibility does not only apply to issues centred around technical difficulties, but accessibility becomes a problem when access to the network is limited to wired connections in offices, when staff members are always on the go between classes on campus and attempting to work from home:

> *Difficulty in accessing the network, particularly while on the go on campus, such as a lack of Wi-Fi connectivity. It is difficult to access resources when I am moving around. For example, I can't access my email via my mobile device because knowledge on how to set it up has not been shared. I have a good technology skill level, so there are no other factors. I just find a way to work around the problem.* (Respondent 5)

I don't think that there are any potential technology issues, as long as staff have access to the resource at home, as most people have access to the network from home. The system must be accessed from anywhere, especially when some staff work from home. (Respondent 3)

Furthermore, the respondents feel that not only must technology be stepped up, but also the competence of the IT support staff needs attention:

The system must work and the staff that oversee the system must be competent. (Respondent 1)

The sense was that the confidence in the technology to serve the needs of the human actors is also reliant on the confidence in the staff that oversee these resources. Confidence of the academic actors in their technology skills, however, seems to be the prevailing factor that would undermine the role of technology as an actor in the knowledge sharing actor-network. Skill in using IT resources is a broad category composite of the lack of experience or skills in using IT resources:

Not everyone is tech savvy, so you lose out on the benefits. (Respondent 4)

A lack of skills, as most don't have all necessary skills. (Respondent 6)

Lack of training:

Timing of training is usually not good, as it usually clashes with classes, for example. (Respondent 6)

Access to technology and accessibility to training. (Respondent 11)

There are some systems in place to assist, but training is important. It's difficult to make the time for training, so as a result systems are not used to their potential, such as e-learning. The system seems great, but time is an issue. (Respondent 13)

Perceived ease of use of IT applications, that is further complicated by the constant changes in technology

It is difficult to handle technology as it takes time and preparation. All I need is chalk and a black board. Electrical engineering is technical and needs nothing else to teach. Learning how to use programs is an issue, and so is the Internet connection, etc. (Respondent 7)

The drawback is that a lot of people are still technology illiterate. I can count on my fingers the number of people using e-learning, for instance. They think that the nature of our jobs is face-to-face instruction but don't realise that e-learning can be used to complement teaching, so they don't know how to use it optimally. (Respondent 17)

The fact that technology moves so fast, especially over the past 20 years is intimidating to older people. When we started teaching that time, we found it intimidating to use a video cassette. With the burst of technology we have experienced, we have found it difficult to keep up with it. When you are older, it is a mind-set. Younger people 'speak' technology. Because we are sharing with younger people who are better at using it, it is intimidating. (Respondent 12)

Generation issues where older staff might not be willing to use technology. (Respondent 1)

The researcher noted in several of the interviews that age is a perceived factor that would determine an academic's aversion to or acceptance of technology. It is perceived that younger academics embrace technology whereas older academics show apprehension towards technology. Furthermore, the impression was that those respondents who felt that they would fully embrace the use of technology to support knowledge sharing were those academics who make use of technology to support their teaching and learning activities. The current negative attitudes toward technology stem from a prolonged struggle with using technology due to technical issues and the perceived lack of suitable IT support. This has impacted on the level of utilisation of IT applications. However, the respondents do feel confident in the use of technology to support knowledge sharing if there is a suitable task technology fit:

There must be an appropriate platform in place that suits the needs of the staff. (Respondent 1)

Issues of software compatibility – features must link to the intended use. (Respondent 8)

Too much reliance on technology can be bad, as this will impede on communication and sharing. The bad can be in the way that people choose to use the technology. For example, emails can be good and bad. It can ensure immediate communication but can't convey a message in the way that it was intended. So the success lies in the way people choose to use it. (Respondent 9)

A person/ department must choose one technology at a time. If there are too many things to use, people lose interest. Using one tool gives us time to master it. (Respondent 14)

Task technology fit is perhaps one of the most important issues to the respondents after the reliability of technology, as this is important for defining the role of technology in the knowledge sharing actor-network. This theme aligns with the concerns for technology expressed under problematisation. The role of technology must be carefully formulated to align with the goals of knowledge sharing and the suitability to the needs of the academics.

5.3.3.6. Process factors

Nonhuman factors that impact on the stability of the actor-network also include process factors. The role of processes in the actor-network is that of a facilitator, much like the role of

technology. However, processes would exist even if technology was not used to share knowledge. All knowledge sharing would rely on processes to ensure that the academics have access to professional knowledge and are able to share their knowledge. The main variables previously touched on were that of manageability, effectiveness, and efficiency. If processes are not designed around these variables, this could lead to betrayal.

Given that the academics do not see knowledge sharing as part of their current core responsibilities, they feel that knowledge sharing processes simply do not exist. However, they have reported their views on what would constitute the factors that could impact on knowledge sharing as far as processes are concerned. These factors include the lack of management of processes, process structure, lack of guidance and the organisational culture.

The lack of management not only relates to the lack of management support for implementation, but also the lack of management of the processes after implementation:

> *The lack of notice taken by those in positions to effect change. If staff share their knowledge to improve processes, then there must someone to see the recommendations by staff to effect the changes. The feedback should be acknowledged and implemented.* (Respondent 1)

> *Management indecision, i.e. taking too long to implement decisions and strategies (processes) with no proper concept of what one wants to achieve. This leads to long lead times to effect change.* (Respondent 2)

> *If the HOD doesn't do his thing, it won't work.* (Respondent 7)

> *The lack of management of the process. If we started now, we need to ensure that someone else will be able to take it up if we leave.* (Respondent 10)

Once again, management support has proved to be important to the actor-network. It was pointed out to be important for interessement and sustained support for knowledge sharing, but has emerged as an important factor for implementation. Implementation in this context would be ensuring that knowledge sharing processes are implemented and that the knowledge shared is used to implement improvements and changes.

The process structure was important to the academics, as it was raised as a factor by a majority (twelve) of the respondents. Process structure centres on the manageability variable that was determined as one of the important roles of processes. This means that processes must be designed to ensure that knowledge sharing is manageable within the existing workloads of the academic staff. Process structure emerged as follows:

There must be convenience, people don't like to change what they have been doing and the knowledge sharing process should not detract from that. It should not move people away too much from the norm and it should not take too much time. (Respondent 5)

It depends on how we have structured sharing. It can have a negative impact unless people are prepared to use it, such as being too prescriptive. There must be freedom in use. (Respondent 8)

There are also time factors related to organising the opportunities to share. (Respondent 11)

First of all, I don't like admin, so that should be considered. (Respondent 12)

The overload of knowledge could be a problem, as I can't keep up with emails, reading etc. The main issue is time constraints. (Respondent 16)

The lack of guidance relates to guidelines for sharing and training for utilising processes:

Staff need training on how to conduct a meeting. Staff harp on the same issues instead of getting through the points on the agenda. We need a good person to chair the meetings. (Respondent 9)

There should be good guidelines and it should be simple to do. (Respondent 15)

Being clued up with the mechanisms. Staff should know how to use any vehicle, or mechanisms used for knowledge sharing. (Respondent 17)

People knowing what must be shared. (Respondent 18)

The organisational culture will impact on knowledge sharing processes:

Not everyone contributing because they have got people working in the same department and they may decide they won't do it because someone else will. We've all got something to share. (Respondent 3)

Everyone must play a role and understand its importance. (Respondent 10)

If people aren't into it, it won't matter what processes there are. (Respondent 7)

The feeling amongst the respondents is that unless the organisational culture can accommodate knowledge sharing, it does not matter what processes have been implemented. This, however, could be attributed to the issue of conformity. If the academics see knowledge sharing as an extra task to undertake, it will not be considered as important as the traditional core responsibilities. However, if knowledge sharing is considered as part of the core responsibilities, the attitude toward knowledge sharing could be changed, as outlined by the following statement:

With the workload model not being up to scratch we are all upset and not happy about doing certain tasks. Knowledge sharing should be built into the workload model. (Respondent 14)

5.3.4. What factors influence the institutionalisation of the knowledge sharing actor-network?

The institutionalisation of knowledge sharing was considered as a way to mobilise the knowledge sharing actor-network. Mobilisation is achieved through various means of inscription. Institutionalisation of knowledge sharing could serve as a form of inscription. Business dictionary (2014) defines institutionalisation as "[a] process which translates an organisation's code of conduct, mission, policies, vision, and strategic plans into action guidelines applicable to the daily activities of its officers and other employees. It aims at integrating fundamental values and objectives into the organisation's culture and structure". Institutionalisation has been observed from the respondents' point of view in terms of formalising knowledge sharing and making it compulsory.

Respondents were presented with the following question: would their willingness to share knowledge decrease if it was not compulsory? Fourteen respondents did not think that they would be less likely to share their knowledge if it was not compulsory. Of the four respondents that felt that they would be less likely to share if they were not required to do so, one respondent attributed this to the fact that knowledge sharing is not considered as part of the workload model and as such is not tangibly recognised. Another respondent felt that time was an issue while another respondent felt that they would do it if everyone else was doing it or if it was mandated. In general, those who were less likely to share reveal a common thread, being the recognition of knowledge sharing.

The respondents offered their views on how knowledge sharing can be formalised. Business dictionary (2014) defines formalisation as "the extent to which work roles are structured in an organisation, and the activities of the employees are governed by rules and procedures". The respondents did not show an aversion to formalising knowledge sharing, instead they recommended the following factors as a way to formalise knowledge sharing: implementing processes, incorporating a structured, systematic platform, using technology, offering support, standardisation and institutionalisation. Structure has been mentioned in previous interview responses as an enabler for knowledge sharing and sustaining knowledge sharing. Therefore the respondents alluded to formalisation as a way to ensure that knowledge sharing does take place.

Processes ensure that knowledge sharing opportunities exist:

There should be automated prompts, and short, smaller, manageable methods of soliciting knowledge, such as surveys or short questions. There should be processes in place that ensure that knowledge can be shared. (Respondent 1)

> *A regular formalised meeting on teaching practices and curriculation . . . For example, we need to discuss new policies and how it affects us.* (Respondent 4)

> *For example, once a year academic staff should look at their core curriculum and whether it is still current. In a sense we do have a process of knowledge sharing in place where we have a file that is updated with a record of what is done in a subject, including assignments, assessments, etc. This is however a manual system. So the sharing is not necessarily between staff. If it is identifying problems, such as the early warning system (identifying at-risk students), then yes there should be a formalised process.* (Respondent 9)

A structured, systematic platform ensures accessibility to knowledge:

> *There should be structure, such as systems that harness knowledge and there should be a search facility.* (Respondent 1)

> *Staff can for instance post on a forum that goes into a database as part of a review process, such as things to consider when reviewing study guides. The knowledge can be segregated in 'boxes' such as on your desktop according to relevancy to certain areas of work for sharing ideas. There should be a system for logging thoughts.* (Respondent 5)

> *Overall there should be a database that you can access to get what you're looking for. This is less time consuming, such as posting ideas on Blackboard. A place where all knowledge can be found and we can got there to find it.* (Respondent 13)

Using technology enables a greater degree of sharing because sharing does not always mean that staff must meet to share:

> *Mobility in as far as accessing knowledge at any time from mobile devices can encourage consistent use.* (Respondent 1)

> *Management must map out a suitable strategy and cement it by providing the appropriate tools. They should use a multi-pronged approach, i.e. personal interaction and technology.* (Respondent 2)

> *Workshops will not work. Knowledge sharing is slower in a workshop situation where everyone wants to have their say. It is more productive when sharing occurs between two or three people at a time. And someone that has learned from what has been shared shares it with someone else. It should also be facilitated online, as knowledge sharing will happen faster that way.* (Respondent 3)

As mentioned, technology should not be central to knowledge sharing, but should support knowledge sharing. This means that at times technology will not be used, depending on the suitability to the situation, but also ensures that there is a balance, particularly when time is a factor.

Support manifests in various forms, including that of management, training support and administrative functions:

> *It should be driven by the HOD.* (Respondent 7)

> *If it is identifying problems, such as the early warning system (identifying at-risk students), then yes there should be a formalised process. But then admin staff should be added to assist with the administrative side.* (Respondent 9)

> *Very often people need to be reoriented and trained to undergo a paradigm shift. There should be deliberate training, especially for new people coming in.* (Respondent 16)

Both standardisation and institutionalisation lead to formalisation. Standardisation focuses on formulating and implementing the guidelines that ensure order and uniformity in the context of knowledge sharing (Business dictionary, 2014) and institutionalisation overlaps with standardisation in as far as implementing the strategic goals of the institution into guidelines, but with the added facet of integration of the core values into the culture and structure of the institution (Business dictionary, 2014).

Standardisation emerges as follows:

> *Through policy, but to get to a policy, there must be consultation and there must be a process until you finalise your policy.* (Respondent 16)

> *The idea should be followed by meetings… and the laying down of the rules.* (Respondent 7)

> *There could be a level of institutionalisation in the sense that it is promoted as something that is needed or that this is something that is going on and taking place at this time or in these ways.* (Respondent 8)

Institutionalisation emerges as follows:

> *Here our timetables are filled to the brim. There are no slots for staff development. It should be there, they should make provision for sharing.* (Respondent 17)

> *A regular formalised meeting on teaching practices and curriculation must be scheduled on the timetable . . . Knowledge sharing can be integrated into operational processes, but in smaller groups.* (Respondent 4)

> *There must be a culture of sharing. If not, nothing will be done. The culture must be institutionalised for knowledge to be shared at all levels.* (Respondent 18)

Standardisation reaffirms the respondents' views that guidelines are needed. These guidelines should outline what must be shared and how it must be shared. Institutionalisation

aims to integrate knowledge sharing into the workloads of staff so that a knowledge sharing culture is institutionalised. As respondent 2 pointed out:

> *They should be able to convince, not force staff. Institutionalisation is paramount, as it displays that there is a buy-in from management which is important for convincing staff that they should participate.*

5.4. General framework

The factors that emerged from the analysis have been represented in Figure 5.1, which follows, as a comprehensive, refined, general framework for the higher education context. The framework is guided by the theoretical framework of ANT. The categories and their relationships are represented as a general framework based on the initial conceptual framework in Figure 5.1 and represents new knowledge about the academic domain from the perspective of the participants in the research. The contextual analysis for this research and its implications are discussed in more detail in Chapter 6.

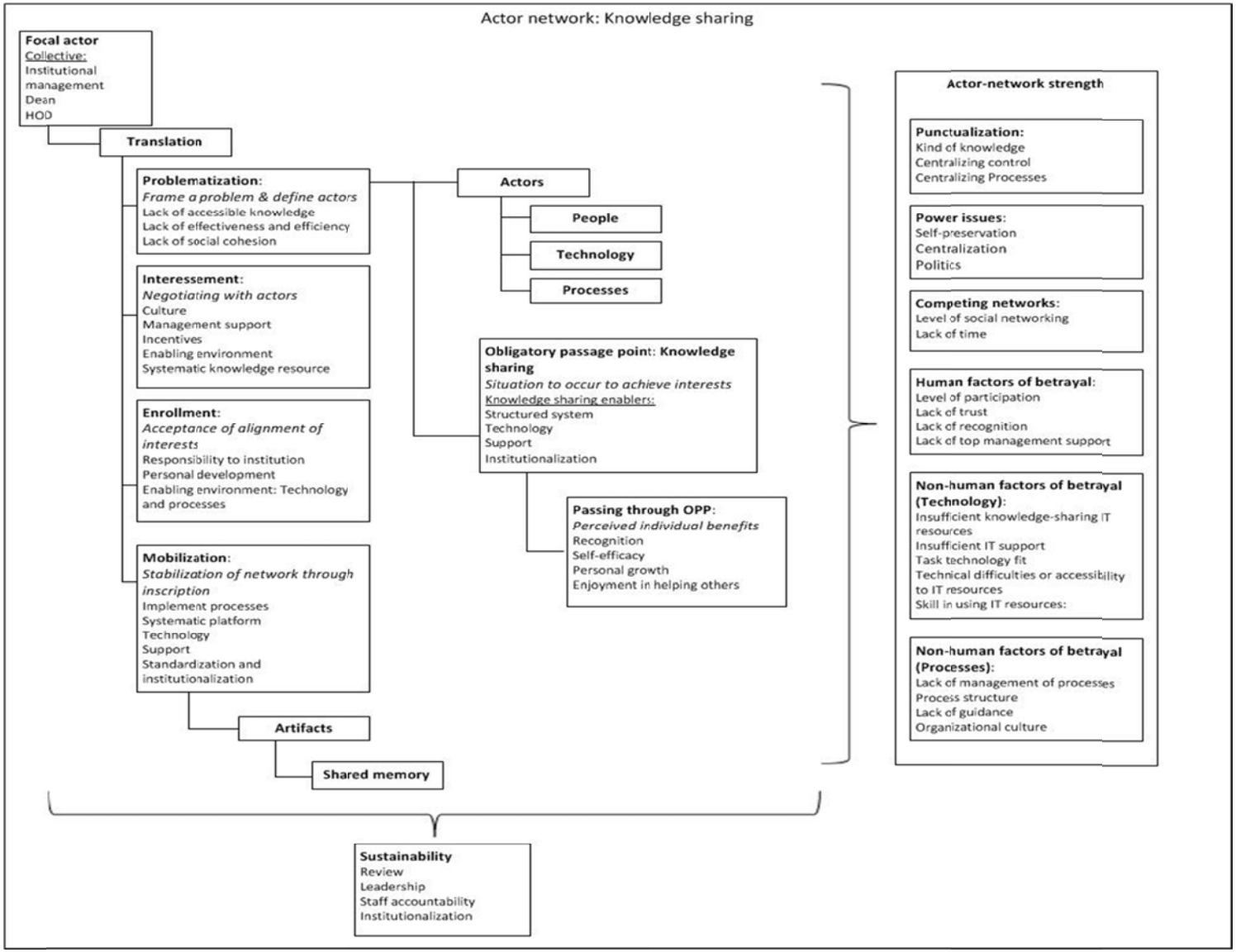

Figure 5.1: General framework

CHAPTER 6: FINDINGS AND DISCUSSION

6.1. Introduction

The previous chapter provided an analysis of the qualitative data collected via the interviews. The chapter concluded with a summary of the analysis depicted as a refinement of the original conceptual framework that guided the collection of the data. This refined conceptual framework can be regarded as a general framework emerging out of this research. Based on this general framework, strategies to support knowledge sharing amongst academics in higher education institutions would be recommended. The data were interpreted through the lens of the ANT. This chapter will interpret and discuss the findings in relation to the literature that was consulted in Chapter 2 and explain any new insights obtained about the research problem.

The discussion will start with a background look at what was already known about the problem. Thereafter a statement of the results, with reference to Chapter 5, will be made. These results will be compared to the literature in Chapter 2 and explanations for the results will be provided. The chapter concludes with the implications of the results and suggestions for future research.

6.2. Background information

This research set out to determine the factors that affect knowledge sharing among higher education academics using ANT as a theoretical lens and, as such, presented a novel way of exploring knowledge sharing factors. Knowledge management was the main theme of the research, which, as previously outlined, constitutes several activities, including capturing, storing, sharing and using of knowledge (Lee, 2001:324). Knowledge sharing was selected as the point of focus as the main process of knowledge management (Hong, Kim & Suh, 2012:13093) due to the fact that it sustains knowledge management.

A similar study has not been undertaken and hence there are no studies that have presented results similar to that anticipated by the researcher for the academic context. The literature, however, did provide the background to what would constitute the actors in a knowledge sharing actor-network, or the main themes of the research. The themes were based on the prevailing factors in the literature that impact on knowledge sharing not only in the business context but also in academia. These were reported as human factors, technology factors and process factors, which were therefore identified as the actors in the actor-network for knowledge sharing.

The main research objective was to develop a framework to guide the implementation of knowledge management strategies for the higher education context. In order to achieve this

objective, four research questions had to be explored. The first research question sought to determine those factors that have an influencing role on the success of forming a knowledge sharing network. The second question sought to determine those factors that can have a positive influence on the growth of the knowledge sharing network. The third question sought to determine those factors that pose a threat to the stability of a knowledge sharing network and the fourth question sought to determine those factors which can help to institutionalise the knowledge sharing network. The factors that emerged from the research and which serve to answer the four research questions would provide insight into how to implement knowledge sharing strategies in the higher education context.

The review of the literature revealed that those studies employing theories in the study of knowledge sharing factors focused mainly on social factors. Very few studies focus on sociotechnical factors and in particular the influence of processes on knowledge sharing intentions.

In reviewing the literature very little data were found on the factors that would impact on the formation and growth of a knowledge sharing actor-network. However, it was found that there is a high reliance on people to initiate and sustain knowledge sharing. Factors influencing institutionalisation of knowledge sharing have not explicitly received focus in the literature, but the implication is that technology and processes have a strong influence on institutionalisation. However, most factors reported were factors that are strongly related to those impacting on the stability of a knowledge sharing actor-network, that is, the factors that negatively impact on people sharing their knowledge. The researcher, however, attempted to glean as many factors from the literature as possible that could be mapped to the concepts of ANT in order to obtain an historical analysis of factors. This historical analysis was presented as a conceptual framework in Figure 3.1.

The review of the literature revealed that there is a growing body of research on the enablers for knowledge sharing. These prior studies note the importance of cultural and motivational factors, that is, social factors. Further investigation revealed three different perspectives: people and technology are considered to be equally important (Biloslavo & Zornada, 2004:6); people and processes are key to the success of a knowledge management system (Call, 2005); and effective learning though knowledge management is achieved when people, technology and processes come together Armistead (1999:145). Therefore, not only should people receive focus for the study of knowledge sharing factors, but there should also be an emphasis on technology and processes. Much of the core focus has been on social factors, and where there is a focus on technical issues, most of these issues are at its inception. However, it has been noted in the literature that technology should feature as an enabler for knowledge sharing, and should not be the core focus. A strong relationship between culture

and suitable technology has been reported in the literature (Hackett, 2000:42). It has also been asserted that cultural, behavioural and organisational issues should be addressed before technical issues (Annansingh *et al*., 2006)

Further observations revealed that knowledge sharing processes are not integrated into the daily routines in higher education because knowledge sharing is not perceived to be a high priority (Biasutti & El-Deghaidy, 2012:863). In particular it was reported that a key factor that impacts on processes in academia is knowledge sharing mechanisms (Arntzen *et al*., 2009:129). Processes were highlighted as very important, particularly by Sulisworo (2012:115) and Rowley (2000:329), who asserted that higher education institutions must consciously and explicitly manage their knowledge management processes.

Studies have noted the importance of a systematic approach to knowledge sharing for access to quality knowledge resources and to make communication with relevant persons possible for the exchange of tacit knowledge (Ravitz & Hoadley, 2005:958; Wang & Wedman 2005:119-120).

6.3. Results

As previously highlighted, there are certain factors that the researcher anticipated would generate new knowledge for the higher education context, given that this research utilises a novel way of exploring knowledge sharing factors among higher education academics. The initial assumption going in to the research was that the knowledge sharing factors that have emerged from the business context cannot be reapplied to the academic context, given the very contextual nature of knowledge and hence knowledge sharing. The research did confirm the differences between the academic and business contexts, which is evidenced by the differences between the original conceptual framework (Figure 3.1) and the general framework (Figure 5.1). It was revealed that academics realised their responsibility to share knowledge, given that they work in an environment of continuous learning. However, the comment, “People do not share because they haven’t been asked” supports the major finding that people do not share because there isn’t an enabling environment for sharing. The second major finding is that management support and a platform for sharing is what constitutes an enabling environment. These factors must be in place for knowledge sharing to occur.

Other major findings are that culture continues to feature as a factor influencing knowledge sharing. Processes received more focus than technology as influencing the academics’ sharing. The researcher expected technology to receive a greater focus, considering the enabling role that it would place in knowledge sharing, but it seems that processes are what really determine successful knowledge sharing.

The following sections report on the factors related to each of the four research questions.

6.3.1. Factors influencing the success of forming a knowledge sharing actor-network

6.3.1.1. The focal actor and level of sharing

The formation of the actor-network is initiated by a focal actor; therefore a focal actor in a knowledge sharing network of aligned interest in the context of this research had to be identified. The results of the research did not clearly indicate one specific person being favoured as a focal actor to drive the formation of a knowledge sharing actor-network. There were divergent views on whether the role should be undertaken by one person or should be a collective effort. The consensus, however, was that the focal actor should possess both management and teaching knowledge. This could be attributed to the fact that the respondents felt that knowledge sharing should be undertaken at all levels, that is at the subject, department, faculty and institutional level. The motivation provided for this assertion is that knowledge shared at different levels collectively constitutes valuable knowledge in the knowledge sharing actor-network. The general perception, however, is that the kind of knowledge shared at each level is different: where more general forms of knowledge are shared by management, more discipline-specific knowledge is shared on departmental or subject levels. Furthermore, if the focal actor is equipped with both management and academic skills, they would be better suited to filter knowledge between levels, as pointed out in the analysis, from management level down to academic level and from academic level up to management levels.

6.3.1.2. Factors influencing problematisation

During the first moment of translation the focal actor must identify his or her interests by framing a problem. It is the shared interest which is defined as the OPP. In this research, that would be knowledge sharing. Unless academics share their view on the problems that knowledge sharing could help to overcome, a problem cannot be successfully framed. The focal actor must successfully rally the support of the actors to the extent that the actors are willing to align their interests with that of the focal actor. In a sense, the focal actor must know what academics are experiencing to frame a problem successfully.

The factors constituting problematisation were found to be the lack of accessible knowledge, lack of effectiveness and efficiency and lack of social cohesion. The lack of accessible knowledge was reported to be caused by a lack of available knowledge resources and the lack of a systematic approach to knowledge sharing. Some respondents felt that the lack of an available knowledge resource is attributed to the lack of willingness of academic staff to share their knowledge, whereas a lack of leadership was also attributed to be a cause. The

researcher however will assert that the problems reported are due to the fact that knowledge sharing is not placed high on the agenda in the academic context, and hence no provision has been made for it. Knowledge sharing is happening in an ad hoc manner. This will inevitably lead to a lack of accessible knowledge. As pointed out in the literature, where there are low-level knowledge management activities taking place, there is a lack of institutionalisation and failure to develop proper knowledge management strategies (Fong & Lee, 2009:312; Khalil, 2012:48).

The lack of access to knowledge has an impact on effectiveness and efficiency. As pointed out in the review of the literature, by effectively harnessing the knowledge of the organisation, the right knowledge can be supplied to the right people at the right time (Holsapple, 2001:1; Hong *et al.*, 2012:13094), thereby enabling people to put this knowledge into action to enhance organisational efficiency and effectiveness (Bush & Tiwana, 2005). Work duplication was a variable that impacted on efficiency. It was asserted in the introduction to the research that academics keep reinventing the wheel, and as a result waste valuable time. This could be because ad hoc methods of knowledge sharing do not lead to a systematic store of knowledge. Hence the academics do not have access to the knowledge that they need to be efficient. It is this lack of readily available knowledge that could lead to lack of efficiency. Arntzen *et al*. (2009:129) found that academics recreate existing teaching materials, asserting that this is time that is wasted which could otherwise be spent with students or doing research. This is an issue of efficiency. Furthermore, they (ibid.) also argue that this has led to inconsistencies in lectures, especially when newly-appointed academics recreate their own lectures, hence impacting on effectiveness.

As pointed out in the analysis, ineffectiveness is also aggravated by the lack of collaboration, such as when there is a lack of communication on what academics are covering in the same subject or on different levels of the same subject and integration between different subjects. This ineffectiveness could be due to the lack of tacit knowledge being shared, that is personal interaction. Not only should systematic knowledge resources exist in the form of a store of knowledge, or knowledge repository, but there should also be systematic sharing in person. In other words, there should be opportunities to share. As pointed out by Ravitz and Hoadley (2005:958), a systematic approach to supplying relevant information and to make communication with relevant persons for the exchange of tacit knowledge possible is required for access to quality resources.

A lack of social cohesion constituted more specific variables, namely a lack of trust and lack of communication. In fact, Daud and Sohail (2009:131) regard a lack of communication and a lack of trust as individual-level knowledge sharing barriers. It could be asserted that the lack of trust leads to a lack of communication and a lack of communication leads to

ineffectiveness. Panteli and Sockalingam (2005) considered trust to be one of two central factors that they studied as influencing knowledge sharing. As pointed out in the review of the literature, their choice of issues hinged on the argument that humans are central to knowledge sharing. Kankanhalli *et al*. (2005) consider trust to be a contextual factor. They (ibid.) posit that the level of trust can have an impact on the level of collaboration in the organisation. This is consistent with the findings that a lack of trust can lead to a lack of communication which is necessary for collaboration. Chen and Lin (2009:4) acknowledged identification-based trust as a factor influencing knowledge sharing among teachers. Identification based trust essentially occurs when both parties understand, agree with and identify with each other's needs. They (ibid.) assert that a person's commitment to the organisation is linked to factors that help to build trust, that is, knowledge sharing is achieved through mutual trust and influence between people in an organisation. This is a factor, however, that will be discussed further under section 6.3.1.3 where culture is discussed as a factor of interessement.

The historical analysis as presented in the original conceptual framework showed operational autonomy (Hendriks, 1999), collective cognitive responsibility (Chen & Lin, 2009), reciprocity (Kankantalli *et al*., 2005) and task interdependence (Huang & Lin, 2008) to be potential factors of problematisation. These factors do not seem to feature in the context of this research as factors of problematisation, but there is an overlap. Where the lack of collaboration features as a problem related to the lack of social cohesion, task interdependence and operational autonomy suggest issues of reliance on others to be effective.

As a task of problematisation, the focal actor should not only frame a problem, but also identify the actors of the knowledge sharing actor-network. The analysis confirmed people, processes and technology as actors in a knowledge sharing actor-network. However, the researcher did not expect processes to feature more prominently than technology. A significant result was that all respondents felt that people and processes are important, whereas eight-nine percent felt that technology should be part of the actor-network. These findings support Call's (2005) assertion that people and processes are key to the success of a knowledge management system. These findings would also explain why prior studies predominantly addressed cultural and motivational factors, that is social factors (Choi, Kang & Lee, 2008:743) and why Erickson *et al*., (2001:864) motivated for both human and social factors to be taken into account when they asserted that "knowledge is bound up with human cognition, and it is created, used and disseminated in ways that are inextricably entwined with the social milieu".

The concerns around technology were for the lack of personal interaction. However, the respondents did indicate that it can serve as an enabler for knowledge sharing. In other words technology should complement knowledge sharing processes, but should not be the focus of knowledge sharing. These findings support the view of McAdam and McCreedy, (1999:93) who indicated that knowledge management is not IT, but IT is a small component of knowledge management. This ties up with the following findings: a significant observation regarding problematisation is that fifteen (83%) of the eighteen respondents allude to process factors as factors of problematisation, while seven respondents allude to social factors and two respondents allude to technology factors. This could provide an indication of the level of importance placed on each of the actors in the knowledge sharing actor-network. As mentioned, processes were highlighted as very important by Sulisworo (2012:115) and Rowley (2000:329) for the higher education context. This finding also supports the reported factors of problematisation, in particular the lack of systematic sharing, and is consistent with the finding that a key factor that impacts on processes in academia is knowledge sharing mechanisms (Arntzen *et al*., 2009:129).

6.3.1.3. Factors influencing interessement

Interessement is the second moment of translation, which involves convincing the identified actors to realign their interests with that of the focal actor, in other words, to pass through the OPP. In this context the realignment of interests would be to accept knowledge sharing as a way forward to address the problems identified under problematisation in section 6.3.1.2 above. The actors, as previously explained, can be human and nonhuman actors. This section, as previously explained in the analysis, focuses on the human actors to obtain their views on what would be successful strategies of interessement.

It was found that the main factor influencing interessement was culture. Culture, in the context of this research, is considered to be “a way of thinking, behaving, or working that exists in a place or organisation” (Merriam Webster, 2015). Developing a culture for knowledge sharing emerged as a factor influencing efforts to solicit academic support for knowledge sharing. In other words, a knowledge sharing culture simply does not exist and the first point of call should be to develop this culture for successful interessement. These findings are consistent with the views of Call (2005), Mayfield (2008), Beers *et al*. (1998:50) and Annansingh *et al*. (2006:117). Call (ibid.) cited culture as a fundamental issue for knowledge management to succeed. Beers *et al*. (ibid.) and Annansingh *et al*. (ibid.) cited culture as a contributing factor. These findings support the importance of people as an actor in the previous section.

The researcher undermined the importance of culture going in to the research. However, it seems that culture is not so much an issue of willingness, but more emphasis must be

placed on the way people work. As argued in the review of the literature, the success of knowledge management initiatives is strongly influenced by knowledge sharing and the success of knowledge sharing is contingent on the environment in which it is undertaken. This environment is unique to each organisation due to its culture. The views of the respondents are consistent with that of Ahmad *et al*. (2000:232-233), who asserted that the aim of preserving knowledge management efforts is to create a culture of sharing in an organisation. This view can be extended to the interessement stage of translation. Before academics are willing to align to the interests of the knowledge sharing actor-network, this culture must be nurtured. Knowledge sharing techniques processes and technology must also align to the way that academics work. As pointed out by Cranfield and Taylor (2008:98), the distinctive nature of academics impact on the culture of the institution. Furthermore, they assert that each culture could have subcultures for each discipline (ibid.). These subcultures emerged subtly during the interviews.

Given the unique nature of the higher education context, Sulisworo (2012:115) suggests that higher education institutions should have their own framework in place for knowledge management, encompassing the organisational culture. The researcher is of the opinion that due to the lack of a systematic approach to knowledge sharing, a culture for knowledge sharing has not been nurtured. It is this history of an ad hoc manner of sharing that has led to a culture of non-sharing. In keeping with Merriam Webster's (2013) definition of culture, being "the integrated pattern of human knowledge, belief, and behaviour that depends upon the capacity for learning and transmitting knowledge to succeeding generations", the notion that prior experience has impacted on the culture of the organisation, could be true.

The variables reported to influence culture are that of a knowledge sharing driver and nurturing of a sharing culture among academics. A culture of knowledge sharing could be influenced by the level of social cohesion. It was previously pointed out that this is a problem in the institution, and as a result there is a lack of trust and communication. These statements imply that by nurturing communication and trust, that is creating a culture of sharing, there would be higher levels of social cohesion. This finding is consistent with Chen and Lin (2009:4) when they asserted knowledge sharing is achieved through mutual trust and influence between people in an organisation. Bhatt (2001:74) advised that organisations must construct an environment of participation by redesigning traditional work procedures and gradually entrenching knowledge sharing behaviour in the organisation.

Management support also emerged as a factor, but in the effort to develop and nurture a knowledge sharing culture. Leadership features once again as a factor. Here, in the form of management support and a driver for nurturing a knowledge sharing culture. This confirms Bhatt's (ibid.) view of the responsibility to construct an environment of sharing and

participation. This finding may affirm the influence of leadership on the level of knowledge sharing in the institution. The notion that a lack of leadership might be an influence on the lack of knowledge sharing might be significant, as can be seen in the factors pertaining to problematisation and interessement. As asserted in the analysis, the seriousness with which knowledge sharing is undertaken is contingent on the support and commitment shown by management. If this support and commitment is lacking, the academics will not expend time and energy on knowledge sharing. Interestingly, the study by Fong and Lee (2009) on motivations to share in property management firms found that top management support was the most important motivating factor to share knowledge.

An enabling environment was also found to impact on interessement. This factor was underpinned by several variables, including time, environment and manageability. Workload and core hours impacted on time, whereas manageability was strongly linked to how knowledge sharing would take place. The researcher also detected a strong link between time and manageability. These are issues related to knowledge sharing processes. These issues also show that the culture of the institution will impact on the knowledge sharing processes. For example, the respondents felt that staff should be prompted to share their knowledge, which implied that knowledge sharing must be integrated into the work processes. Furthermore, the respondents perceived knowledge sharing to be an administrative task. The concerns were around the administrative workload that the academic staff members have to take on in addition to core teaching and learning responsibilities. This is also an indication of the culture of the institution. If knowledge sharing was seen to be a core responsibility, then the views on knowledge sharing, and hence the culture, would be different.

The environment factors relate to the resources in general, which refers not only to the surroundings, but also technology. Environment factors have been raised by Daud and Sohail (2009:131), who reported that the physical environment is an organisational-level factor, including the accessibility of formal or informal meeting spaces, besides technological barriers. The respondents felt that their willingness to share is linked to the provision of suitable resources to support knowledge sharing. This is perhaps why lack of structure also emerged as a factor impacting on interessement. There is an overlap here between the factors of interessement and problematisation. The overlap not only occurs with leadership, but also a systematic way of sharing. The respondents felt that a structured system is needed. The lack of structure, as per the respondents' views, pertains to technology and processes, including opportunities and platforms. The respondents felt that a way to add structure could be to standardise knowledge sharing through policy. These are issues pertaining to mobilisation and will be addressed under section 6.3.4 on institutionalisation. These findings, however, are in agreement with the view of Arntzen *et al*. (2009:129) on the

importance of knowledge sharing mechanisms and the postulation made by Aczel *et al*. (2004), that the biggest incentive for sharing knowledge lies in the system which facilitates such sharing. This "system" can refer to any systematic manner of sharing, whether process- or technology-related.

Incentives also materialised as a factor of interessement. A surprising finding was that incentives for this context, were not monetary, but based on recognition and workload alleviation. Incentives have received increased focus in the literature (De Pablos *et al.*, 2013:307) and as pointed out in the review of the literature, Kankanhalli *et al*. (2005) actually characterised knowledge sharing as the provision of one's personal expertise and knowledge for economic reward or social benefits. However, this research is in keeping with the reports of De Pablos *et al*. (2013:311) that studies on incentives for knowledge sharing have led to divergent results. This could be dependent on the culture of the organisation and reveals the unique nature of every organisation. This research reveals that incentives do not have to be in the form of economic reward or social benefit, thereby contradicting the views of Kankanhalli *et al*. (ibid.). However, the finding that corresponds with that of Kankanhalli *et al*. (ibid.) is that organisational rewards as a motivating factor is context-specific.

The historical analysis as presented in the original conceptual framework showed motivation (Daud & Sohail, 2009:137) to share and incentives for sharing (Fong & Lee. 2009) as factors of interessement. The similarity for the context of this research lies in incentives for sharing. Motivation to share, though not explicitly evident in the analysis, is implied with the leadership factor, that is, the role of management to nurture a culture of sharing and drive knowledge sharing.

6.3.1.4. Factors influencing enrolment

After the interessement process, it is important to define the role of the respective actors in the knowledge sharing actor-network. Enrolment ensures that the actors have been assigned with specific roles and responsibilities so that their inclusion in the network is justified and so that the actors understand the significance of their role in the actor-network to sustain the OPP. The roles of heterogeneous actors must be defined. Inscription serves to cement the enrolment of the actors and to ensure that the actors do not betray the actor-network. This section will look at the factors that the respondents perceived as affecting their decision to share knowledge, providing insight into how to define the role of the actors in the actor-network. Even though processes and technology as nonhuman actors cannot provide input in this regard, the human actors provided insight into how these actors should be defined in the knowledge sharing network in order to enable their knowledge sharing activities.

Factors of enrolment have been discovered for each of the respective actors in the knowledge sharing actor-network, both human and nonhuman. The human factors of enrolment have emerged as factors relating to the academics' responsibility to the institution, underpinned by collective cognitive responsibility, reciprocity and benefits to the student; as well as factors of personal development, underpinned by recognition, personal growth, enjoyment in helping others and self-efficacy. Factors of collective cognitive responsibility (Chen & Lin, 2009) and reciprocity (Kankanhalli *et al*., 2005) featured in the historical analysis as factors of problematisation. In this research, however, these factors emerged as factors of enrolment. The researcher anticipated that these factors would be considered as issues relating to reliance on others to get the job done. In the academic context however, academics feel that it is their responsibility to share, given that their unique environment is one in which knowledge production is a key element of their job, rather than just a practical aspect of their work. What is interesting to note is that the research by Chen and Lin (ibid.) was also based on the educational context, focusing on teachers. Furthermore, Kankanhalli *et al*. (2005) found that the results of their research revealed that reciprocity is constrained by context, which is consistent with the findings of this research. Of course, the benefit to the student presents a unique factor for the academic context, thereby proving the unique nature of the academic context.

It is personal factors for enrolment, however, that align with the factors identified in the historical analysis which apply to enrolment, including enjoyment in helping others and self-efficacy. These factors are not influenced by context, hence the overlap in factors. These findings correspond with that of Kankanhalli *et al*. (ibid.) who found that internal motivating factors like self-efficacy and enjoyment in helping others are not constrained by context. Personal motivating factors do not only apply to factors for enrolment but also the perceived individual benefits for passing through the OPP. The variables underpinning the abstracted category of personal development can also constitute factors relating to the perceived individual benefits for passing through the OPP, that is to align with the interests of the knowledge sharing actor-network (refer to Figure 5.1). When considered from this perspective, there is a significant overlap in the personal motivations for knowledge sharing in the historical analysis. The historical analysis revealed that the perceived individual benefits of passing through the OPP would be individual outcome expectations, a sense of achievement, a sense of responsibility, promotional opportunities and recognition of the job done. The general framework in Figure 5.1 shows that these perceived individual benefits include recognition, self-efficacy, personal growth and enjoyment in helping others.

The overall overlap when considering personal factors from both the perspective of enrolment and perceived individual benefits of passing through the OPP not only includes enjoyment in helping others and self-efficacy, but also recognition. The factors that did not

emerge as impacting on personal motivation in this research were that of individual outcome expectations, a sense of achievement and promotional opportunities. Fulfilling individual outcome expectations was a factor studied by Chen and Lin (2009). Three forms of outcome expectations underpin this factor, including physical outcomes like pleasant feelings, social outcomes, such as financial reward or praise, and self-evaluative outcomes such as self-satisfaction. Factors of sense of achievement and promotional opportunities as studied by Hendriks (1999) did not emerge in this context. Perhaps the reason for this is because these are factors that are strongly related to competition in the workplace, and this might not be a factor in the academic environment.

A new factor of personal motivation was that of personal growth. In fact, in this research, personal growth has been highlighted several times in the interview responses, as well as enjoyment in helping others. Recognition was mentioned twice. These findings support Kogut and Zander's (1992) research (as cited by Kim & Lee, 2006:374) on the association between knowledge sharing and human resource management practices. Their research found that knowledge sharing increases when employees understand that it helps them to develop personally and earn personal recognition, among other factors.

The enrolment of technology and processes as actors in the knowledge sharing actor-network has not been studied from this perspective and hence there are no historical factors to compare it with. However, the findings do corroborate the views of researchers on the role of technology and processes in enabling knowledge sharing, including that of Armistead (1999:145) when he states that effective learning through knowledge management is achieved when people, processes and technology come together. The respondents felt that the enrolment of these nonhuman actors were for the purpose of creating an enabling environment to share knowledge. Factors of manageability, operational effectiveness and efficiency, and access to professional knowledge emerged as those factors for the enrolment of processes and technology. As pointed out in the analysis, when the role of these nonhuman actors is that of an enabler, the role should be defined in response to the three variables outlined, that is to make knowledge sharing manageable for the human actors, to ensure operational efficiency and effectiveness, and to provide access to professional knowledge.

The manageability aspect of knowledge sharing is closely related to the way that knowledge sharing processes are designed. In fact, time constraints were reported to impact on manageability here as well. These were factors of interessement and have emerged as factors of enrolment. This could give some indication as to the importance of the factor of manageability. Several respondents indicated that current workloads present a constraint to knowledge sharing that would potentially impact on their opportunity to share their

knowledge. If knowledge sharing is viewed as an additional task, it would most likely not be done as the academic's workload is already at full capacity. This was a raised an as issue in the analysis where the only "recognisable" form of work pertains to teaching and learning activities, research and administrative tasks. If knowledge sharing was granted as much recognition as the tasks mentioned previously, academics would not view it as lacking in value, and as a result would not place knowledge sharing lower down the scale of priorities. This is perhaps why the incentives that were suggested were that of recognition and workload alleviation. Mårtensson (2000:212) places emphasis on several factors that could lead to the successful implementation of a knowledge management strategy, including time and incentives. She highlights the importance of creating the time and opportunity for people to learn. Her (ibid.) suggestion is to make knowledge sharing practices part of the job. In keeping with the findings that incentives are context-specific. Mårtensson (ibid.) points out that creating the right incentive based on the culture of knowledge sharing is important devising a strategy for knowledge sharing. The incentives suggested by the respondents for workload alleviation and recognition speak to the culture of the institution.

The researcher discussed the importance of access to professional knowledge as impacting on operational effectiveness and efficiency. It was posited that processes and technology can contribute to ensuring access to professional knowledge, whether through personal interaction or technology-based applications that can give access to a store of knowledge and that can systematically capture knowledge. The needs expressed by the respondents are affirmed by Chen and Lin (2009:3) who cited Eriksson and Dickson's (2000) views on four *preliminary* elements for knowledge sharing, including a shared knowledge creation and distribution process, an IT infrastructure to provide the system and tools to support the dissemination of knowledge, media to facilitate and promote knowledge sharing, and the values, standards and procedures to inform social and cultural norms of the organisation. Interestingly, these are preliminary elements which tie in with the factors for interessement and enrolment of the actors in a knowledge sharing actor-network. These are elements that should precede the actors passing through the OPP. This has been addressed in the following section on knowledge sharing enablers, which related to what must occur to achieve the interests of the knowledge sharing actor-network, that is passing through the OPP.

6.3.2. Factors influencing the growth of a knowledge sharing actor-network

Successful formation of a knowledge sharing actor-network relies on the adequate application of the four moments of translation. The actor-network, however, must grow to include new actors when necessary and the enrolment of actors must be sustained through various strategies which can prevent the betrayal of the heterogeneous actors. This section focuses on sustaining the knowledge sharing actor-network as one that is competing against

other actor-networks in the academic environment. This section will address the enablers for knowledge sharing and sustaining knowledge sharing.

6.3.2.1. Knowledge sharing enablers

Opportunity to share was the factor that emerged through the historical analysis as a knowledge sharing enabler. Not only did Mårtensson (2000:212) point out that there must be opportunities for knowledge sharing to enable learning, but Daud and Sohail (2009) also found sharing opportunities to significantly influence knowledge sharing in the higher education context.

When the respondents were asked about the enablers for knowledge sharing, the main enablers emerged as a structured system, technology, support and institutionalisation. A structured system not only relates to technology, but to knowledge sharing processes. In general, a structured system is perceived to incorporate processes, infrastructure and knowledge sharing platforms. Technology not only applies to the use of technology to support knowledge sharing, but also to adequate IT support. Support also emerged as involving management support, a coordinator of knowledge sharing activities and training opportunities. Training not only applies the use of technology, but all infrastructure and methods used to share knowledge, including knowledge sharing processes. Institutionalisation suggests the inclusion of standardisation, recognition, and ensuring that there are opportunities to share and time to share.

It seems that Daud and Sohail's (ibid.) finding that opportunities to share will have a positive effect on knowledge sharing was confirmed in this research. They also found that technology is an important driver for sharing, and that other important enablers of knowledge sharing in the higher education context include better infrastructure and training programmes.

The processes establish the structure and opportunities to share, as previously substantiated. Infrastructure and platforms pertain to the methods for knowledge sharing. Those suggested by the respondents included meetings, workshops and manuals. This finding corroborates that of Daud and Sohail (ibid.) who suggested that management can play a positive role by organising knowledge sharing opportunities, including open discussions, seminars and forums. Infrastructure can also incorporate technology. As Sulisworo (2012:118) points out that even though knowledge sharing ultimately depends on people, many knowledge sharing processes need the support of an IT infrastructure.

Management support once again emerged as important to the respondents, not only as it pertains to interessement and enrolment, but sustained management support is required to ensure the ongoing interest of the academics in the knowledge sharing actor-network. The role of a coordinator of knowledge sharing activities also emerged as an enabler for

knowledge sharing as well as proper IT support. These findings support that of Daud and Sohail (2009) who found that staff attitudes to knowledge sharing are linked to the level of organisational commitment in the form of support from superiors. In this context, this not only relates to management support since organisational commitment can be expressed through the provision of a coordinator, competent IT support, and training support.

The respondents show support for the institutionalisation of knowledge sharing. In this context, institutionalisation refers to a structured and well-established system that can help to foster a knowledge sharing culture. Standardisation in the form of consistency, recognition of what constitutes the core responsibilities of the academic (including knowledge sharing) and opportunities to share all contribute to institutionalising knowledge sharing. These factors help to make knowledge sharing the norm. Institutionalisation is seen as necessary in changing the mind-set of academics to create and sustain a culture of knowledge sharing. As Daud and Sohail (2009:137) explicitly pointed out, management in higher education institutions should create an environment to promote a knowledge sharing culture. In fact, working culture was reported in their (ibid.) research to play an important role in enhancing knowledge sharing among academics in universities. Working culture relates to social interaction culture. If enablers are in place, making knowledge sharing a standardised practice, an increased level of interaction and sharing among academics could more naturally occur. This premise is supported by Bhatt (2001:74), who asserts that the organisation must change the culture and procedures to enable knowledge sharing. Nonaka and Takeuchi (1995) also verify this argument, stating that the organisation should develop and nurture this transformation and integration between its staff, that is, they should develop and nurture an environment of knowledge sharing.

6.3.2.2. Sustaining knowledge sharing

The researcher explored the issue of sustainability even though it was not considered in the historical analysis. The aim was to obtain the respondents' views on how sustainability could be achieved in an environment where there are competing networks. Issues of time constraints and workloads imply that sustaining knowledge sharing could become an issue. The respondents revealed four main categories that encompass sustainability. These main categories included review, leadership, accountability and institutionalisation.

The review factor was important to the respondents in measuring the effectiveness of knowledge sharing. As mentioned in the analysis, if knowledge sharing is proved to deliver tangible benefits to academics, sustainability of the knowledge sharing actor-network may result. Amongst the factors that Mårtensson (2000:212) found as critically important for the successful implementation of a knowledge management strategy, was the factor of evaluation. She (ibid.) reported on a multi-firm study that explored the barriers to knowledge

management, including the lack of a system to evaluate the effectiveness of knowledge management. She (ibid.) suggested that evaluation can be informal, such as talking to the users about the systems and processes, or using more formal, sophisticated tools to measure outcomes. Sulisworo (2012:118) suggests that the effectiveness of knowledge sharing is linked to the result of organisational performance in terms of efficiency, adaptability and innovativeness. Effectiveness can be linked to efficiency in saving time when finding knowledge, increased cooperation amongst staff and generally saving time while working with technology. The emergence of review as a factor of sustainability is consistent with Luo's (2009:262) statement that the process of providing feedback on how one's knowledge sharing efforts have benefited others' work is essential for developing a positive attitude toward knowledge sharing.

The respondents also felt that effectiveness is important from the management perspective. Management is perceived to play an important role in providing a "listening ear". The respondents felt that unless their input was used to effect change, this would likely have a negative impact on their continued willingness to share. If a system of review and evaluation is in place, management can review knowledge sharing strategies to ensure that systems are responsive to the changing culture and environment of the organisation. This finding is consistent with Sulisworo's (2012:119) view on adaptability being a measure of effectiveness, asserting that effective knowledge sharing processes will provide the organisation with the knowledge they need to know how to adapt to the changing environment.

The issue of leadership featured prominently in the interviews, and has been highlighted as a significant influencer of knowledge sharing at its inception, including problematisation and interessement, while also proving to have an influence on its sustainability. Leadership for sustainability included ensuring consistent awareness of knowledge sharing by nurturing and encouraging knowledge sharing activities and being an example for the knowledge sharing initiative. The respondents reported that a knowledge coordinator would serve as an enabler for knowledge sharing. By appointing such a coordinator, this person could fulfil the role of sustaining knowledge sharing through nurturing knowledge sharing and being an example. Mårtensson (2000:211) reports that organisations that have appointed full-time knowledge officers have achieved the greatest success in knowledge management. However, the respondents have a different view on such a coordinator. Appointing a full-time coordinator means that this person would only oversee knowledge sharing activities. The respondents, however, feel that such a person should have management and academic skills, keeping up to date with current academic issues. In other words, they should not become out of touch with what is happening "on the ground" and therefore should still be participating in academic activities. Lee and Roth (2009:23) state that leadership emerges through the promotion of

the value of knowledge management, identifying opportunities to share and developing metrics for assessing the impact of knowledge sharing, amongst other processes. Their view on leadership is related to the need for review, as well as the respondents' views on the role of leadership, being that of promoting knowledge sharing.

Accountability, according to the analysis, applies to the academics. The respondents felt that if academics are not held accountable, they will continue to avoid opportunities to share knowledge due to a tendency to operate within their own boundaries. A knowledge sharing culture cannot exist under such conditions. Suggestions for the rotation of duties and performance reviews were made. However, if such an approach is undertaken, it is important that it is not too rigid or prescriptive. Kim and Lee (2006:373) caution against relying on formal interactions, such as structured work teams, for knowledge sharing. Even though formal relationships do play a facilitating role in knowledge sharing, they (ibid.) assert that most knowledge sharing occurs during informal interactions. Furthermore, the respondents' view on accountability having a positive impact on sustainability could be due to the current lack of a knowledge sharing culture. As mentioned, the first port of call should be to develop this culture in an environment where a knowledge sharing culture does not exist. If this culture was in place, the academics may not necessarily have to be explicitly held accountable.

Institutionalisation for sustainability is a collective term which represents the commitment of management. Ways to institutionalise knowledge sharing would include implementing strategies for knowledge sharing as well as implementing changes in response to knowledge shared about improvement. Training also features as a way to institutionalise the initiative through implementation. The respondents felt that this would cement the commitment to the initiative. Kim and Lee mention training programmes as a way to formalise knowledge sharing (2006:373). Mårtensson (2000:211) also points out that top management can encourage processes to promote knowledge sharing, such as developing the skills of learning from each other. By promoting these forms of institutionalisation, the perceived benefits that will ensue are a social networking culture and structure. A culture of knowledge sharing, or culture of social networking, is achieved through the structure that is offered by institutionalisation. The findings related to the sustainability of the knowledge sharing actor-network align with the findings reported as enablers. There is an overlap in terms of leadership and institutionalisation factors. This overlap could imply that there is more significance placed on leadership and institutionalisation as factors impacting on the growth of a knowledge sharing actor-network.

6.3.3. Factors influencing the stability of a knowledge sharing actor-network

This section uncovers the issues that may negatively impact on the actor-network strength. In order to recommend strategies aimed to strengthen relationships within a knowledge sharing network, the factors that impact on the stability of the knowledge sharing actor-network were explored. The stability of the actor-network is called into question when a heterogeneous actor betrays the actor-network. For human actors these are usually social factors, particularly when the actor-network is rigid and does not change in response to varying circumstances or environment, which is referred to as irreversibility. Nonhuman actors can have an enabling or restrictive role in an actor-network, depending on their enrolment. It is this restrictive role that was explored, as any nonhuman actor that does not fit within the environment will restrict the aims of the actor-network. Stability factors were explored in terms of punctualisation, power issues, competing networks and human and nonhuman factors. Nonhuman factors have been divided into process and technology factors.

6.3.3.1. Factors of punctualisation

The analysis revealed that the respondents' views on centralisation were divergent because centralisation was understood to encompass four salient themes. These themes emerged based on the respondents' views of what should or should not be centralised. The themes included the kind of knowledge, the level of control, the knowledge resource and the centralisation of processes.

Centralisation in terms of the kinds of knowledge was seen by the respondents to be positive when the kind of knowledge applies to all academics, that is, more generic knowledge. More specific, discipline-oriented knowledge must not be centralised. Centralisation of control was seen to be negative, while the respondents felt that the centralisation of knowledge sharing processes is not ideal, which corresponds with their view about the level of control. The respondents felt that a knowledge resource, or systematic store of knowledge, must be centralised. This is perceived to increase the accessibility of professional knowledge to the institution at large. Sulisworo (2012:118) asserts that knowledge must be stored and systematically categorised for easy and convenient retrieval and for facilitating its dissemination. Kim and Lee (2006) explored centralisation as a factor of knowledge sharing. Their initial review revealed that centralisation can reduce the interest in knowledge sharing because of a reduced level of knowledge sharing initiatives. This is because centralising knowledge sharing higher up the organisational hierarchy could lead to a reduction in the number of knowledge sharing opportunities or activities undertaken. The views that knowledge sharing processes should not be centralised support this finding. Kim and Lee (ibid.) also found that increased flexibility, as it pertains to the influence of organisational

structures on knowledge sharing, will promote collaboration. The view that control should not be centralised supports this assertion. Kim and Lee (ibid.) also reveal that centralisation can lead to a decrease in communication not only between employees, but also between employees and their supervisors.

6.3.3.2. Power issues

Power issues present a threat to the stability of the actor-network in terms of the role of human actors and the influence of organisational structures. The interviews have revealed that there is a link between the level of punctualisation and the power issues that could emerge out of punctualisation. The respondents revealed three variables that would generate power issues that could undermine the knowledge sharing actor-network. These variables are centralisation, self-preservation and politics. Centralisation is a variable that relates to organisational structure, as addressed in the previous section. Dominance of strong hierarchy and rank-based status as a factor studied by Khalil (2012) in the higher education context, and included in the historical analysis, is an implicit factor of centralisation. Kim and Lee (2006:373) suggest that participatory management practices for knowledge sharing can balance the involvement of both managers and their subordinates. From this perspective, knowledge sharing is a collaborative effort. This could potentially eliminate power issues perceived to emerge out of centralisation. Decentralising control and knowledge sharing processes could also serve to eliminate this variable.

Daud and Sohail (2009:131) name “differences in position status”, as reflected in the historical analysis, as an individual-level factor of knowledge sharing. This factor did not explicitly emerge in this research, but is implicit in the underlying meaning of politics. As described in the analysis, politics relate to a person’s desire to improve their status or increase their power in the institution. It was asserted by the researcher that politics as a factor comes into play in terms of the driver of knowledge sharing activities, such as the focal actor. Therefore, it can be asserted that the factor of position status, if described as an individual-level factor, is not a factor of centralisation. It is likely dependent on the person selected to be the focal actor.

Self-preservation, as mentioned in the analysis, relates to one’s need to protect their knowledge. This would lead to a limitation in what people share and impact on their willingness to share. This variable did not emerge in the historical analysis, but did emerge during the interviews. The researcher is of the opinion that nurturing a knowledge sharing culture would dissolve such issues in this context. Furthermore, with the proper leadership, the academics will likely not feel that they will be losing out by sharing their knowledge. Not only did Bhatt (2001:74) assert that the culture and procedures of an organisation must change to enable knowledge sharing, but also the power structures. Therefore, the gradual

entrenchment of knowledge sharing behaviour in the organisation will not only affect the way people work, but also the power structures that existed prior to the knowledge sharing initiative.

6.3.3.3. Competing networks of aligned interest

Usually there are several different actor-networks competing for resources in an organisation. The respondents were asked to report their views on what factors in their work environment would impact on their willingness and the opportunity to share their knowledge. Two broad themes emerged, including the level of social networking and time. The level of social networking is perceived to have an impact on the respondents' willingness to share their knowledge while time is perceived to impact on their opportunity to share knowledge.

The feeling from the respondents is that there are many aspects to the job of an academic that require their time and energy. It would be difficult to maintain their alignment with the knowledge sharing actor-network if their colleagues are not doing the same. In other words, unless their colleagues are also participating in knowledge sharing, they will not feel the need to do so as it would be "unfair" to participate and add to the existing load when others are not participating. Furthermore, the respondents felt that knowledge sharing cannot simply be added to their current workloads. It must be recognised as a core responsibility so that the academics do not feel that they are doing extra work. If it is part of their core responsibilities they will likely prioritise it as much as other teaching and learning activities.

These findings support that of Fong and Lee (2009) who found that the top-ranked inhibiting factor to knowledge sharing was a lack of time. These findings also explain why Mårtensson (2000:212) placed emphasis on time as one of several factors that could lead to the successful implementation of a knowledge management strategy. The level of social networking was pointed out by Daud and Sohail (2009:131) to be an individual-level barrier to knowledge sharing. Kim and Lee (2006:373) describe social networking to be an issue related to the organisational culture. These social networks can be formal or informal (ibid.). However, given their (ibid.) assertion that more knowledge is shared through informal interactions between employees, and that individual or group interactions are important to support and encourage knowledge sharing activities; this could explain the impact of the level of social networking on the willingness of the academics to share their knowledge. Kim and Lee's (ibid.) view on social networking being an issue of organisational culture might explain why the respondents felt that the level of social networking might prohibit their sharing.

6.3.3.4. Human factors

Human factors of betrayal in the context of this research pertains to the personal factors that the respondents perceive as impacting on their willingness to share their knowledge. These are factors that could lead to the human actors betraying the knowledge sharing actor-network. In other words, if a human actor perceives these factors to emerge at one point or another, they would abandon the actor-network. Eight respondents purported that they do not harbour any personal factors that would prohibit them from sharing, while the rest of the respondents revealed factors that are in alignment with some previously revealed. The factors include a lack of trust, lack of recognition, level of participation of their colleagues, and level of support from management. The alignment is with factors for the formation and growth of the actor-network, as well as factors that affect their continued alignment to this specific actor-network in their environment (factors of competing networks). This shows that these factors are important to them personally and impact on their personal motivations to share and align with the knowledge sharing actor-network.

The historical analysis shows staff attitudes (Daud & Sohail, 2009), lack of trust (Kim & Lee, 2006), differences in culture (Daud & Sohail, 2009), lack of top management support (Fong & Lee, 2009), too much effort (Khalil, 2012) and hard to manage and coordinate (Khalil, 2012) as the human, or personal, factors inhibiting knowledge sharing. The factors that emerged in this research that are in alignment with the historical analysis are that of trust and management support while recognition and level of participation of colleagues, which is considered to be the same as the level of social networking, are new to the human factors of betrayal. It seems that the respondents in this research are not inhibited by the amount of effort it takes to share or whether sharing is difficult to manage or coordinate, which implies that their capacity or ability to share is not problematic. The factors reported here are a result of the influence of external parties on personal motivations to share. These findings are in support of Fong and Lee's (2009) finding that the highest motivating factor to share is top management support while colleagues' cooperation and participation was the second most important motivating factor.

The fact that management support has been raised once again might give an indication that management support is amongst the most important factors affecting knowledge sharing in the academic context. This finding also supports that of Daud and Sohail (2009:137) who found management support to be a significant predictor for positive knowledge sharing. Interestingly, this is the only time in the research that the issue of recognition occurs in terms of appreciation, rather than in the form of workload alleviation and the like. This is a more personal kind of recognition which makes sense for the context. Lack of trust and the level of participation of colleagues might go hand in hand, as Kim and Lee (2006:373) consider both to be factors of organisational culture. They (ibid.) assert that a trusting and open

environment can promote knowledge sharing and enhance communication as it empowers employees to freely share personal knowledge. They go on to state that in the absence of such trust, even formal methods of sharing are insufficient to encourage sharing with others in the same environment.

6.3.3.5. Technology factors

Nonhuman factors that impact on the stability of the actor-network include technology factors. When the role inscribed in technology does not conform to the needs of the actor-network, this could betray the actor-network, thus impacting negatively on the strength of the actor-network. Even though technology has not received as much focus as processes or humans in the discussion thus far, it has emerged as an important enabler for knowledge sharing. The reason that technology factors have not emerged very strongly for factors affecting the formation of a knowledge sharing actor-network could be due to the fact that a knowledge sharing culture must be nurtured before technology can be considered.

Annansingh *et al*. (2006) suggest that cultural, behavioural and organisational issues should be addressed before technical issues. However, the researcher is of the opinion that this is important in an environment where there is very little to no knowledge sharing culture during the formation of the actor-network. Daud and Sohail (2009:130) contend that even though the human side to knowledge sharing is important, technology should receive consideration. Hendriks (1999) also argues in favour of technology to improve access to knowledge. While technology is useful, Hackett (2000:42) pointed out that any technology-based software should be designed around the way people work. This will explain why cultural, behavioural and organisational issues precede technical issues. However, at some point technical issues should be addressed given its strong influence on the formation and maintenance of knowledge management (Chae *et al*., 2005:70), and hence knowledge sharing. Chen and Lin (2009) recognised the importance of the sociotechnical nature of knowledge sharing, and emphasised the need to embody the social factors of knowledge sharing into the technical knowledge management platform, which is the aim of this section. Hence the role inscribed in technology in the context of this research is informed by the culture of the institution under study.

The broad themes that have emerged as the factors relating to technology that would impact on the stability of the actor-network include: the lack of or insufficient knowledge sharing IT resources, insufficient IT support, technical difficulties or accessibility to IT resources, task technology fit and skill in using IT resources. The notion that there are simply not enough suitable technology-based resources to support knowledge sharing is perhaps due to the fact that knowledge sharing is not an established practice in the institution and that ad hoc methods of sharing are used. Furthermore, perceptions about technical difficulties stem from

the existing problems relating to technology, but not necessarily in a knowledge sharing context. Technical problems also seem to have a negative impact on opinions about using technology to support core teaching and learning activities. Given the culture of the academic environment for this institution, mobility is an important factor for technology; therefore accessibility has been raised as a factor. Accessibility from all areas on campus via wireless connections and access from off-campus venues is specifically required for the way people work in the institution. The respondents placed emphasis on competent IT support due to prior negative experiences regarding IT support. Respondents are concerned that new technology is incorporated in the academic environment while current ongoing problems in existing IT structures are ignored. Not having suitable support structures would defeat the purpose of supplying suitable technology to support knowledge sharing.

Task technology fit is perhaps one of the most important issues to the respondents after the reliability of technology, as this is important for defining the role of technology in the knowledge sharing actor-network. This theme aligns with the concerns for technology expressed under problematisation. The role of technology must be carefully formulated to align with the goals of knowledge sharing and the suitability to the needs of the academics.

Confidence of the academic actors in their technology skills, however, seems to be the prevailing factor that would undermine the role of technology as an actor in the knowledge sharing actor-network. Skill in using IT resources is a broad category composite of the lack of experience or skills in using IT resources, as well as the lack of training. Perceived ease of use of IT applications is further complicated by the constant changes in technology. The researcher has noted that previous experience and use of technology sets a precedent for the level of acceptance in using technology for knowledge sharing. This observation was made based on the fact that those respondents who felt that they would fully embrace the use of technology to support knowledge sharing were those academics who already make use of technology to support their teaching and learning activities. Furthermore, it was also noted that age is a perceived factor that would determine an academics' aversion to or acceptance of technology. Perhaps age and prior use or experience are factors that go hand in hand.

The technology factors of betrayal based on the historical analysis were unrealistic expectations of IS/IT systems (Daud & Sohail, 2009), difficulties in building, integrating and modifying technology-based systems (Daud & Sohail, 2009), insufficient knowledge sharing IT resources (Khalil, 2012), level of utilisation of IT applications (Kim & Lee, 2006), perceived ease of use of IT applications (Kim & Lee, 2006), ICT match to motivations for sharing (Hendriks, 1999), perceived task technology fit (Huang & Lin, 2008), unwillingness to use application (Daud & Sohail, 2009) and technical difficulties (Fong & Lee, 2009).

Given that the institution does not have an established knowledge sharing practice and hence does not have established knowledge sharing technology, factors of unrealistic expectations of IS/IT systems, difficulties in building, integrating and modifying technology-based systems, level of utilisation of IT applications and unwillingness to use applications would not apply to this context. These are factors that are primarily applicable to organisations in which knowledge-sharing IT has been well established. Kim and Lee's (2006) study focused on organisations that had established knowledge management systems. Daud and Sohail (2009), though pointing out the aforementioned technology factors affecting knowledge sharing behaviour as a preliminary analysis to their study, did not use it as a focus. Instead they decided to focus on the extent of knowledge sharing. They also studied knowledge sharing from the perspective of higher education academics. Perhaps the fact that they decided to focus on the extent of sharing and on the human and process factors that impact on the extent of sharing shows that knowledge sharing has not been taken up formally in higher education institutions. Hence the research has not looked at technology factors for knowledge sharing if it is not an already established practice. However, the factors reported in this research do serve to show where emphasis should be placed.

The factor of insufficient knowledge-sharing IT resources as discovered in this research shows that there is a need for IT to support knowledge sharing activities, while technical difficulties are more a reflection of past experience, given that there is little to no knowledge-sharing IT resources. Task technology fit, however, is an important consideration for the provision of suitable IT. Aczel *et al.* (2004) assert that the biggest incentive for sharing knowledge lies in the system which facilitates such sharing. Carroll *et al*. (2003) are in agreement with their assertion and therefore proposed the following three essential features of a knowledge sharing system: firstly, it should be easy to use, secondly it should provide an abundance of tools, including tools for interaction, and thirdly it should help its users to locate knowledge which they require for professional application and should encourage further face-to-face interaction between its users. These features are in agreement with the expectations outlined by the respondents regarding technology and the facilitating role that it should play.

Skill in using IT resources is a composite of the perceived ease of use of IT applications, lack of skills and lack of training. The perceived ease of use and lack of skill could eventually lead to the unwillingness to use applications and as such impact on the level of utilisation of IT applications. This was evident in the research by Annansingh *et al.* (2011) who proposed a social networking approach to knowledge management in higher education, which was met with reluctance by higher education academic managers. They asserted that this could either be due to participants not being willing to share knowledge or not being aware of the full

potential of the technology (ibid.). What is certain, however, is that without the proper training, higher education organisations cannot expect technology to be effective in facilitating knowledge sharing (Lee and Roth, 2009:29). They (ibid.) also warn against assuming that the technology used in one organisation will be successfully applied in another (Pavitt, 1992).

6.3.3.6. Process factors

Nonhuman factors that impact on the stability of the actor-network also include process factors. The analysis revealed that processes are ranked as the most important enabler for knowledge sharing, given that it was the category that received more focus for issues related to problematisation. This provided an indication of where there are shortcomings. While human factors related to the organisational culture and a lack of management support emerged quite strongly throughout the discussion, the opportunity to share was also emphasised. This is a theme that relates directly to knowledge sharing processes. The role of processes in the actor-network is that of a facilitator, much like the role of technology. However, processes would exist even if technology was not used to share knowledge. Mårtensson (2000:210) had the following to say about technology in this context: “Most firms with a KM system based purely on a technology solution have found that such an approach fails. Though technology may be necessary for KM, it appears never to be sufficient”. This assertion reinforces the importance of knowledge sharing processes encompassing a variation of methods and techniques.

As previously stated in the analysis, all knowledge sharing would rely on processes to ensure that the academics have access to professional knowledge and are able to share their knowledge. The main variables previously touched on were that of manageability, and effectiveness and efficiency. If processes are not designed around these variables, this could lead to betrayal. Given that the academics do not currently see knowledge sharing as part of their core responsibilities, they feel that knowledge sharing processes simply do not exist. However, they have reported their views on what would constitute the factors that could impact on knowledge sharing as far as processes are concerned. These factors include the lack of management of processes, process structure, lack of guidance and the organisational culture.

The lack of management not only relates to the lack of management support for implementation, but also the lack of management of the processes after implementation. This finding is consistent with the assertions made by Sulisworo (2012:115) and Rowley (2000:329) that higher education institutions must consciously and explicitly manage their knowledge management processes.

The process structure was important to the academics, as it was raised as a factor by the majority (twelve) of the respondents. Process structure centres on the manageability variable that was determined as one of the important roles of processes. This means that processes must be designed to ensure that knowledge sharing is manageable within the existing workloads of the academic staff. Perhaps the view of Biasutti and El-Deghaidy on knowledge sharing in the higher education context, that knowledge sharing processes must be integrated into the daily routines, will enable manageability (2012:863).

The lack of guidance relates to guidelines for sharing and training for utilising processes. This finding is in agreement with Bhatt's (2001:71) view that when new tools, technologies, processes and procedures are employed for knowledge sharing, the organisation must update the skills of its employees to adapt to these changes.

The organisational culture will impact on knowledge sharing processes. The feeling amongst the respondents is that unless the organisational culture has been nurtured for knowledge sharing, it does not matter what processes have been implemented. This finding supports the assertion by Kim and Lee (2006:373) that in the absence of trust, even formal methods of sharing are insufficient to encourage sharing with others in the same environment.

Clear understanding of organisational vision and goals (Kim & Lee, 2006), nature of knowledge (Khalil, 2012) and lack of infrastructure and resources (Daud & Sohail, 2009) were the perceived process factors highlighted in the historical analysis. Kim and Lee (ibid.) classified the clear understanding of organisation vision and goals as a factor of organisational culture, suggesting that this factor could engender a sense of involvement amongst employees. Perhaps there is a link here with that of the organisational culture factor mentioned above, as impacting on the use of processes. Nature of knowledge in the context of Khalil's (ibid.) study relates to knowledge being difficult to share or articulate due to its nature. However, the respondents did not see this as an issue in the context of this research, even though Khalil's research was based on the higher education domain. However, their study focused on research knowledge. Therefore operational knowledge could be perceived as easier to share. It was previously suggested that processes establish the structure and opportunities to share while infrastructure and platforms pertain to the methods for knowledge sharing. Infrastructure was perceived as an enabler for knowledge sharing as far as processes were concerned, but did not emerge as a factor for betrayal in terms of processes, potentially revealing the respondents place more emphasis on manageability rather than methods.

A final word on knowledge sharing processes is perhaps best articulated by Bhatt (2001:73) when he states that "[n]one of the members in the organisation possesses all the relevant knowledge in accomplishing complex tasks; however, it is interaction between people,

technologies, and techniques that support an organisation in accomplishing complex and novel tasks. Therefore, one of the critical tasks of the management is to coordinate different packets of knowledge through information exchange and sharing."

6.3.4. Factors influencing the institutionalisation of a knowledge sharing actor-network

The institutionalisation of knowledge sharing was considered as a way to mobilise the knowledge sharing actor-network. Institutionalisation has been observed from the respondents' point of view in terms of formalising knowledge sharing and making it compulsory.

When the respondents were presented with the question about whether they would still be willing to share their knowledge if it was optional, fourteen respondents felt they would share regardless. Of the four respondents that felt they would probably not share, one respondent attributed this to the fact that knowledge sharing is not considered as part of the workload model and as such is not tangibly recognised. Another respondent felt that time was an issue while another respondent felt that they would engage in knowledge sharing if it was the norm or if it was mandated. The concerns raised around formalising knowledge sharing are those that have been raised in prior sections of the discussion pertaining to the actor-network strength. Therefore, if formalisation of knowledge sharing is considered, these factors should be addressed during the formation of the network.

The respondents offered their views on how knowledge sharing can be formalised, including implementing processes, incorporating a structured, systematic platform, using technology, offering support, standardisation and institutionalisation. Structure has been mentioned in previous interview responses to be an enabler for knowledge sharing and sustaining knowledge sharing. Processes ensure that knowledge sharing opportunities exist while a structured, systematic platform ensures accessibility to knowledge. The opportunity to share has emerged as an enabler for knowledge sharing and a factor of processes as a nonhuman actor. The importance of opportunities to share in this context corroborates the finding of Daud and Sohail (2009:137) that the opportunity to share is a significant factor that has a positive influence on knowledge sharing in the higher education context.

Using technology enables a greater degree of sharing because sharing does not always mean that staff must meet to share. As mentioned, however, technology should not be central to knowledge sharing, but should support knowledge sharing. This means that at certain times, when it is deemed unsuitable, technology will not be used, while at other times, especially when time is a factor, the use of technology should be encouraged. This finding is in keeping with Mårtensson's (2000:210) assertion that a purely technology-based solution for knowledge sharing would not be sufficient.

Support manifested in various forms, including that of management, training support and administrative functions. The notion of support shows that the emphasis within the institution is on enabling, rather than coercing, staff to share knowledge. Even though the focus of the research is on academic staff, assistance in knowledge sharing initiatives should come from the supporting departments as mandated by management. In other words, the initiative should be an institutional goal that manifests in all areas of the institution that impact on the effectiveness and efficiency of the academic environment.

Both standardisation and institutionalisation lead to formalisation. Standardisation focuses on formulating and implementing the guidelines that ensure order and uniformity in the context of knowledge sharing. Standardisation reaffirms the respondents' views that guidelines are needed, which was a process factor. These guidelines should outline what must be shared and how it must be shared. Institutionalisation aims to integrate knowledge sharing into the workloads of staff so that a knowledge sharing culture is institutionalised. Kim and Lee (2006:374) define formalisation of employee knowledge sharing as "the degree to which organisational activities are manifest in written documents regarding procedures, job descriptions, regulations and policy manuals". They considered formalisation as a factor of organisational structure in their research of knowledge sharing and their preliminary review of the literature revealed that low formalisation encourages a higher degree of knowledge sharing that is varied, open and encourages new ideas and behaviours to emerge. They (ibid.) assert that as a result, "rules and regulations" may serve as a barrier to knowledge sharing. However, their empirical findings revealed that there was no statistical support for their hypothesis that the level of formalisation will have a negative impact on knowledge sharing. Their (ibid.) research focused on the business context, including private and public organisations. The findings of this research, however, affirm the need for a certain level of formalisation in the higher education context.

6.4. Research implications and recommendations

6.4.1. The focal actor and problematisation

Management support has emerged as a strong enabler for knowledge sharing. Even though the views on who the focal actor should be are rather divergent, the general sense is that the respondents were split on whether it should be someone that holds a managerial position, or someone within the academic community. The structure of the institution suggests the focal actor should be different at different points in time during the translation process. The initial stages of the translation process could be driven at the institutional level. Ideally, problematisation should be undertaken at this level, as during this stage the shared interest of the actor-network is defined, which is an institutional interest, not a faculty or departmental interest alone. At this stage the actors are also defined, and management at institutional level

can identify actors that would need to be negotiated with. It was pointed out in the interviews that the respondents feel that they should be supported not only by management, but also by the support departments. By initially driving the OPP from the institutional level, the supporting departments could also share in the interest of the actor-network from an enabling point of view. Institutional management can rally the support of these departments to enable the academic actors in the knowledge sharing actor-network.

6.4.2. Interessement

The interessement process involves negotiating with individual actors or a representative for an actor or actors. It is not, however, guaranteed that when a representative agrees to the realignment of interests that the actors being represented will abide by the agreement. Therefore, it is recommended that institutional-level management negotiate with a representative of the faculty – ideally the dean. This way the dean can negotiate with the respective HODs, and the HODs with their respective departments. This is more suitable given the different cultures of each faculty and of each department within a faculty. By accepting the position of a lecturer, individuals agreed to align their interest with that of the employer, and hence have become actors in the network of the aligned interest, one of those interests being knowledge sharing. The lecturer aligns their interest to that of their employer, the institution, the faculty and the department. This is the network of aligned interest.

Interessement should best be undertaken by a focal actor that the academics can identify with. Negotiating with the academics should ideally be undertaken by the HOD. This is someone with management and academic experience, liaising not only with their academic staff, but also with higher levels of management. HODs typically still take classes and hence are aligned to the interests of the academics at the operational level. They are also able to filter knowledge from higher levels to the lowers levels and vice versa. Filtering knowledge from lower to higher levels means that management must be empathetic toward the needs of the academics and to heed calls for support. Support in this context relates to the changes made in response to the knowledge filtered from the lower levels to the higher levels, showing the academics that they take knowledge sharing seriously and in doing so enabling a knowledge sharing culture.

The institution should align its interests with that of the academic staff to ensure that knowledge that is shared to improve the institution is implemented and that staff members are assured of the value in sharing. If sharing does not lead to an overall improved institution, then staff members are less likely to keep sharing. HODs fulfil a significant role as the focal actor both to negotiate with the academic actors, as well as in driving knowledge sharing in the respective departments, while maintaining an alignment to the goals of the faculty and the institution at large. If the initial focal actors in the translation process are in higher levels

of management, this will show the academics that management support exists on all levels and hence an enabling environment will be created. There must be a reliable platform for sharing, which is also something that is dependent on the support of the institution. Furthermore, power issues are less likely to eventuate in a situation where management simply play a supportive role while the HOD drives the knowledge sharing within their respective departments. This collaborative role would also serve to inhibit power issues. Furthermore, the changing of the focal actor during translation can also help to inhibit control from being held by any focal actor for too long. A collaborative relationship helps to keep such power issues in check.

Support by management must be shown through creating an enabling environment before interessement is undertaken. This can apply to facilities, time and attitudes (culture). The focal actor serves as a representative and example. This means that the focal actor must show sustained support for knowledge sharing to enable a knowledge sharing culture. The current problems reported as a lack of knowledge resource and systematic knowledge sharing are seen by the respondents as related to the lack of a knowledge sharing culture and lack of leadership. Interestingly enough, the respondents pointed out that a knowledge sharing culture must be nurtured during interessement and leadership must be shown during the process of interessement.

A lack of social cohesion can be addressed by instilling a culture of meeting to share, driven by HOD's. This would require the HOD to convince staff members that there is a benefit to sharing, rather than fearing that they will lose power by engaging in knowledge sharing. Knowledge sharing should not be in reaction to problem situations like mark reviews or at-risk subjects as this will engender defensive behaviour, rather than encourage the exchange of useful ideas. If knowledge sharing is proactive, such unpleasant feelings are avoided.

Stagnation in positions can lead to the idea that knowledge acquisition is not necessary. Therefore rotation in positions such as subject coordinator, teaching different subjects, and academics sitting on committees can prevent staff from creating silos and also serve to nurture a knowledge sharing culture through sustained learning. Senior staff members also need to provide guidance in knowledge sharing within their departments to encourage younger staff to share their ideas. Younger staff members more urgently feel the need to share to acquire initial knowledge, and more senior staff members often feel that they no longer need to learn anything else, as they have been in tenure for very long. The sharing should be nurtured between junior and senior staff, and personal, non-formal methods of knowledge sharing will help to overcome the divide.

In terms of time, the workload model ideally should incorporate knowledge sharing as a core responsibility. This will prevent the academic staff from considering knowledge sharing as an administrative exercise or merely an opportunity to create a favourable impression. Management should consider it as a recognisable form of work and should incorporate workload alleviation as an incentive. This could be in the form of additional support from supporting departments, as well as through the use of tutors and time allocation on timetables for staff to meet. If some time was freed up to allow staff to share, by automating certain processes or moving the responsibility to support departments, then staff will have more time to share, given that time constraints are an issue.

6.4.3. Enrolment

Creating an enabling environment through facilities pertain to the work environment, such as an attractive meeting space, technology that works and knowledge sharing tools that suit the culture of the department, faculty or institution, as well as IT support that is competent. A centrally accessible knowledge sharing platform that not only houses a knowledge repository, but is able to push knowledge to relevant persons, is needed. This knowledge sharing platform creates a store of knowledge, or collective memory of the institution. This will enable knowledge resources to be harnessed in a systematic manner. A systematic knowledge resource, or platform, has been one factor that has been raised several times by the respondents as enabling knowledge sharing or access to knowledge that is needed to do their jobs. Often time is wasted trying to access relevant knowledge and the respondents have affirmed the view that they keep reinventing the wheel, wasting valuable time and resources.

It has been established that technology contributes to creating an enabling environment by enabling access to professional knowledge, and operational effectiveness and efficiency through access to this knowledge when it is needed. Technology can either play a role in enabling access to relevant persons through different forms of online communication or through access to stored knowledge. If the role of technology is defined well enough to address the aspects of manageability, ensuring process efficiency and effectiveness, and ensuring access to professional knowledge, it will not “betray” the actor-network. Instead, technology can assist as far as systematic access to relevant knowledge (efficiency lies in the easy access to knowledge without wasting time looking for relevant knowledge and effectiveness is enabled by finding exact what you need), maintaining a store of relevant knowledge, and by providing access to professional knowledge.

Processes must be carefully designed to consider the needs of the users, or academic actors. Manageability has been raised as an important factor to consider. If knowledge sharing is integrated into work processes, this could make knowledge sharing manageable

and academics will view it as more than just another administrative task. The strength of the knowledge sharing actor-network lies in the ability to integrate knowledge sharing processes into daily work processes. In order to convince staff that this is not just a new fad, there must be a way to show staff that the sharing is part of their core responsibilities.

In keeping with the recommendations for suitable knowledge sharing processes and technology, knowledge sharing should be self-regulatory and staff should feel free to take part. Sharing should not by time consuming, but should be broken into smaller units like a one- or two-question survey at certain points in time which are automatically prompted. In addition to this, a Wiki-type platform which is available institution-wide should exist that is easily searchable, updated by staff as needed and is not controlled by anyone. There should be access to knowledge 24/7, and from any platform, such as a mobile device. Accessibility is key to ensuring continued use and sustained sharing. Processes also encompass opportunities to share through formal and informal, face-to-face meetings. Formal meetings should be structured and scheduled, rather than left to chance.

The structure of the institution lends itself to varying levels of punctualisation. The unique nature of knowledge at these varying levels need to be shared, which implies that a punctualised actor be formed at the institutional level. However, sharing must more vigorously be pursued at lower levels, such as between subjects and departments, as these are the kinds of dynamic knowledge that academics encounter daily. It is at this point that tacit knowledge comes into play as a way to improve on the way that academics perform. The idea is that through knowledge sharing, the tacit knowledge that is acquired through daily work that is carried out by the academics is shared with colleagues to help improve effectiveness and efficiency. Knowledge sharing, however, will be less frequent higher up the hierarchy where change is incremental. Usually this kind of knowledge pertains to procedures. Given the frequency of sharing at the lower levels and the highly tacit and dynamic nature of knowledge, the researcher recommends that sharing occurs on a nonformal, personal basis, either through personal interaction, or utilising IT in the form of collaborative tools and asynchronous communication tools such as discussion boards and synchronous communication tools, such as chat rooms and instant messaging. Utilising a combination of the two methods enables a hybrid approach to knowledge sharing and prevents over-reliance on technology, while providing a technology-based platform for those academics who prefer it.

The infrequency of sharing at the faculty and institutional level means that sharing can occur on technology-based platforms where these kinds of knowledge can be kept and where change is infrequent. A less dynamic knowledge environment would require non-personal or formal methods of sharing knowledge, such as through knowledge repositories. Here the

academics are not required to meet on a personal basis, which means that they are able to retrieve only that knowledge which is applicable to them.

A knowledge based system can be used to create a store of knowledge and different kinds of knowledge can be stored and accessible to different academics, depending on their needs. In this way, there is no control of access to knowledge, and it would be self-regulating. Knowledge sharing processes, as mentioned, should utilise a hybrid approach, which means that personal interaction should also be incorporated into knowledge sharing processes. In this case, personal interaction is more valuable at the departmental level, whereas relatively generic knowledge is shared at the institutional level (between faculties) and at the faculty level (between departments and schools). A knowledge representative can be utilised to engage with other representatives at the institutional and faculty levels. Knowledge sharing must occur on all levels of the institution, as compartmentalisation of knowledge is probable in a situation where knowledge sharing only takes place on one level. For example sharing between faculties will expose academics to new and innovative ways of doing things.

The mission and vision of the institution must guide the operations of the respective faculties. This would mean that there is a certain level of standardisation across faculties, which will ensure that a level of quality is maintained. Quality cannot be maintained unless faculties communicate with each other and know what their colleagues are doing and how they are doing it. The academics also feel that their voices are not being heard by management. As much as sharing must take place from management levels down to the academic level, the calls of academic staff need to be heeded as well. It is a symbiotic relationship.

Task technology fit is important to address the level of utilisation of IT applications for knowledge sharing, together with a hybrid approach. If a hybrid approach to knowledge sharing is undertaken, it could not only satisfy the needs of “tech-savvy” academics but also ensure that the technology-averse academics can partake in knowledge sharing activities without having to rely on technology. Training, however, is important to address the lack of skills in using IT amongst staff who perceive technology to be difficult to use. Training should be part of the efforts to institutionalise knowledge sharing. Training should not only address the technological skills gap, but should also be aimed at equipping individuals with the skills for any knowledge sharing processes.

Processes and technology must be designed around the culture of the organisation. The culture can been determined by undertaking a survey to determine the overall preference of the academics and to implement the processes and technology that will suit the needs of the users. Knowledge sharing opportunities should be carefully planned, keeping in mind what must be shared, why it must be shared and when it must be shared. Schedule these activities in advance so that staff members are prepared for it and time is allocated.

6.4.4. Mobilisation

A guideline for knowledge sharing must be drafted so that there is standardisation. Given that the aligned interest should be a collective interest of the entire institution, it should be interpreted as a strategic plan and should be put into practice with guidelines as to what must be shared and how it must be shared. Guidelines must be drafted in consultation with the academics and key players. Implementing knowledge sharing is not a once-off initiative but a continuous process of consultation and revision in response to the changing dynamic of the institution. This will prevent irreversibility. Management need to review knowledge sharing strategies to ensure that systems are responsive and not rigid. This can be achieved through soliciting the views of the academics regularly to gauge the suitability of the current knowledge sharing strategies and to adjust in response to the changing needs of the academic actors. This would of course require that processes or technology has to change from time to time in order to prevent the betrayal of these actors.

Institutionalising knowledge sharing via integration into operational processes can be achieved through the aforementioned ways of integration into the timetables, scheduling of knowledge sharing opportunities, implementing a platform, implementing technology and drafting guidelines. The review process should also be standardised with a timeframe for review and a process for review. If knowledge sharing is recognised as a core responsibility, it will be measured for performance management. If it is to be considered as a core responsibility for the workload model, then it must also be measured as part of performance measurement. If every staff member is held accountable for sharing knowledge, it will help to build a culture of continued sharing, and prevent a situation where only a few discouraged staff members carry the responsibility for the entire department or faculty concerned. There must also be an overall sense of betterment of academic matters pertaining to students that is improving the product that is delivered. Therefore, methods of measuring the success of knowledge sharing can be implemented. Management can gain staff buy-in by showing them how knowledge sharing can work for them. For example, a pilot of knowledge sharing and how it has benefited a certain area of work can be used to gain staff buy-in.

CHAPTER 7: CONCLUSION

7.1. Introduction

This research set out to determine the factors that affect knowledge sharing among higher education academics. The factors were explored using ANT as a theoretical lens. The research, therefore, presented a novel way of exploring knowledge sharing factors. No similar studies have been conducted with no comparable results specifically in an academic context. Having said that, the literature did provide the background to what would constitute the actors in a knowledge sharing actor-network, or the main themes of the research. The themes were based on the prevailing factors in the literature that impact on knowledge sharing not only in the business context but also in academia.

The main research objective was to develop a framework to guide the implementation of knowledge management strategies for the higher education context. In order to achieve this objective, four research questions had to be explored to reveal factors affecting the formation, growth, stability and institutionalisation of a knowledge sharing actor-network. Interviews were conducted with eighteen academic staff members from a UoT in South Africa. The interviews explored the factors inductively, so that the views of the academic actors were explored.

The rest of this chapter will highlight the main research findings that emerged from the research questions and will further discuss the summary of findings, the theoretical and practical contributions of the study, the research limitations and recommendations for future research.

7.2. Factors influencing formation of a knowledge sharing actor-network

The findings show that a focal actor to drive the formation of an actor-network should be a person equipped with both management and academic skills, as they would be better suited to filter knowledge between levels.

The factors constituting problematisation were found to be the lack of: accessible knowledge, effectiveness and efficiency, and social cohesion. The need for available knowledge resources and a systematic approach to knowledge sharing was reported to cause the lack of accessible knowledge, resulting in ineffectiveness and inefficiency. Ineffectiveness is also caused by the failure to collaborate, for example when academics do not communicate on their activities. This ineffectiveness could be due to failure to share tacit knowledge, that is, personal interaction. A lack of social cohesion constituted more specific variables of trust and communication.

It was found that the main factor influencing interessement was culture. Developing a culture of knowledge sharing emerged as a factor influencing efforts to solicit academic support for knowledge sharing. However, it seems that culture is not so much an issue of willingness, rather more emphasis must be placed on the way people work. The variables reported to influence culture are those of a knowledge sharing driver and nurturing of a sharing culture among academics. An enabling environment was also found to impact on interessement. This factor was underpinned by several variables, including time, environment and manageability. Workload and core hours impacted on time, whereas manageability was strongly linked to how knowledge sharing would take place. These are issues related to knowledge sharing processes. These issues also show that the culture of the institution will impact on the knowledge sharing processes. In an effort to develop and nurture a knowledge sharing culture, management support also emerged as a factor. Incentives also materialised as a factor of interessement. Interestingly the incentives were not monetary in nature but rather based on recognition and workload alleviation, revealing that the choice of incentive is often dependent on the unique culture of an organisation. The respondents also felt that there was a lack of structured systems, specifically pertaining to technology and processes, and including opportunities and platforms. Therefore a systematic knowledge resource is needed to add structure and facilitate opportunities to share.

Factors of enrolment have been discovered for each of the respective actors in the knowledge sharing actor-network, both human and nonhuman. The human factors of enrolment have emerged as factors relating to the academics' responsibility to the institution, underpinned by collective cognitive responsibility, reciprocity and benefits to the student, as well as factors of personal development, underpinned by recognition, personal growth, enjoyment in helping others and self-efficacy. Factors of manageability, operational effectiveness and efficiency and access to professional knowledge emerged as those factors for the enrolment of processes and technology. When the nonhuman actors are enablers, their roles should be defined in response to the three variables outlined, that is to make knowledge sharing manageable for the human actors, to ensure operational efficiency and effectiveness and to provide access to professional knowledge.

7.3. Factors influencing the growth of a knowledge sharing actor-network

The main enablers for knowledge sharing emerged as a structured system, technology, support and institutionalisation. A structured system not only relates to technology, but knowledge sharing processes. In general, a structured system is perceived to incorporate processes, infrastructure and knowledge sharing platforms. Technology not only applies to the use of technology to support knowledge sharing, but also adequate IT support. Support also emerged as management support, appointing a coordinator of knowledge sharing activities and training opportunities. Training not only applies the use of technology, but all

infrastructure and methods used to share knowledge, including knowledge sharing processes. Institutionalisation was suggested to include standardisation, recognition and ensuring that there are opportunities to share and time to share.

The respondents' views on how sustainability could be achieved in an environment where there are competing networks were obtained through the interview process. Issues of time constraints and workloads imply that sustaining knowledge sharing could become an issue. The respondents revealed four main categories that encompass sustainability including review, leadership, accountability and institutionalisation. Leadership in particular has featured prominently in the interviews, and was highlighted as having a significant influence on knowledge sharing at its inception, including problematisation and interessement, and also proves to have an influence on its sustainability. A system of review and evaluation is perceived to ensure that systems are responsive to the changing culture and environment of the organisation. Accountability is seen as preventing academics from operating within their 'comfort zones' which is contradictory to building a knowledge sharing culture and learning environment.

7.4. Factors influencing the stability of a knowledge sharing actor-network

Centralisation in terms of types of knowledge was seen by the respondents to be positive when the kind of knowledge applies to all academics, that is, more generic knowledge. More specific, discipline-oriented knowledge must not be centralised. Centralisation of control was seen to be negative, while the respondents felt that the centralisation of knowledge sharing processes is not ideal. The respondents felt that a knowledge resource, or systematic store of knowledge, must be centralised. This is perceived to increase the accessibility of professional knowledge to the institution at large. Centralisation can reduce the interest in knowledge sharing because of a reduced level of knowledge sharing initiatives. Furthermore, by not centralising knowledge sharing processes, there is increased flexibility which will promote collaboration. Centralisation of control can lead to a decrease in communication not only between employees, but also between employees and their supervisors.

There is a link between the level of punctualisation and the power issues that could emerge out of punctualisation. The respondents revealed three variables that would generate power issues that could undermine the knowledge sharing actor-network. These variables are centralisation, self-preservation and politics.

Factors of competing networks of aligned interest were explored as aspects in the work environment that would impact on their willingness and the opportunity to share their knowledge. Two broad themes emerged, including the level of social networking and time. The level of social networking is perceived to have an impact on the respondents' willingness

to share their knowledge while time is perceived to impact on their opportunity to share knowledge.

Human factors of betrayal in the context of this research pertains to the personal factors that the respondents perceive as impacting on their willingness to share their knowledge. Eight respondents purported that they do not harbour any personal issues that would prohibit them from sharing, while the rest of the respondents revealed aspects of a lack of trust, lack of recognition, level of participation of their colleagues, and level of support from management. There is an alignment with personal factors of betrayal and personal motivations to share and align with the knowledge sharing actor-network.

The broad themes that have emerged as the factors relating to technology include the lack of or insufficient knowledge sharing IT resources, insufficient IT support, technical difficulties or accessibility to IT resources, task technology fit and skill in using IT resources. The notion that there are simply not enough suitable technology-based resources to support knowledge sharing is perhaps due to the fact that knowledge sharing is not an established practice in the institution and that currently ad hoc methods of sharing are used. Furthermore, perceptions about technical difficulties stem from the existing problems relating to technology, but not necessarily in a knowledge sharing context. Technical problems also seem to have a negative impact on opinions about using technology to support core teaching and learning activities. Given the culture of the academic environment for this institution, mobility is an important factor for technology; therefore accessibility has been raised as a factor. Task technology fit is perhaps one of the most important issues to the respondents after the reliability of technology, as this is important for defining the role of technology in the knowledge sharing actor-network. Confidence of the academic actors in their technology skills, however, seems to be the prevailing factor that would undermine the role of technology as an actor in the knowledge sharing actor-network. The factor of insufficient knowledge-sharing IT resources as discovered in this research shows that there is a need for IT to support knowledge sharing activities. Skill in using IT resources is a composite of the perceived ease of use of IT applications, lack of skills and lack of training. The perceived ease of use and lack of skill could eventually lead to the unwillingness to use applications and as such impact on the level of utilisation of IT applications.

The analysis revealed that processes are ranked as the most important enabler for knowledge sharing, given that it was the category that received more focus for issues related to problematisation. This provided an indication of where there are shortcomings. The role of processes in the actor-network is that of a facilitator, much like the role of technology. These factors include the lack of management of processes, process structure, lack of guidance and the organisational culture. The lack of management not only relates to the lack of

management support for implementation, but also the lack of management of the processes after implementation. The process structure was important to the academics, as it was raised as a factor by the majority of the respondents. Process structure centres on the manageability variable that was determined to be one of the important roles of processes. The lack of guidance relates to guidelines for sharing and training for utilising processes. The organisational culture will impact on knowledge sharing processes. The feeling amongst the respondents is that unless the organisational culture has been nurtured for knowledge sharing, it does not matter what processes have been implemented.

7.5. Factors influencing the institutionalisation of a knowledge sharing actor-network

The respondents offered their views on how knowledge sharing can be formalised, including implementing processes, incorporating a structured, systematic platform, using technology, offering support, standardisation and institutionalisation. Structure was seen to be an enabler for knowledge sharing and sustaining knowledge sharing. Processes ensure that knowledge sharing opportunities exist while a structured, systematic platform ensures accessibility to knowledge. The opportunity to share has emerged as an enabler for knowledge sharing and a factor of processes as a nonhuman actor. Using technology enables a greater degree of sharing because it means that staff members do not necessarily have to meet in order to share. Support manifested in various forms, including that of management, training support and administrative functions. The notion of support shows that the institution is enabling staff to share their knowledge, not forcing them to do so. Both standardisation and institutionalisation lead to formalisation. Standardisation focuses on formulating and implementing the guidelines that ensure order and uniformity in the context of knowledge sharing. Institutionalisation aims to integrate knowledge sharing into the workloads of staff so that a knowledge sharing culture is institutionalised.

7.6. Summary of findings

The findings of this study support the problem conceptualisation in Figure 1.1. Effective knowledge sharing is achieved when people, processes and technology come together. Knowledge sharing processes must be designed in response to the culture of the organisation, or the way that people work. Furthermore, the processes selected will determine suitable technology, implying that the selection of suitable technology is also socially-informed. This study affirms these concepts to be socially constructed phenomena, as people continuously have an influence on the processes and technology that support knowledge sharing and processes and technology must support the culture of the organisation. Furthermore, processes and technology must be adapted to the changing culture of the organisation.

The dynamics at work within the higher education environment were highlighted in the research even though the data revealed an overlap between the business and academic contexts. Social, process and technology factors continue to pervade knowledge sharing in the higher education context. The exploration of problematisation in this context revealed process factors to receive significant focus before human and technology factors. Processes and technology are affirmed as actors in a knowledge sharing actor-network by providing a platform for knowledge sharing.

The organisational culture and management support emerged as the most important human factors, influencing several areas of the framework, including factors influencing the formation, growth and stability of the actor-network. Management is identified as holding a significant position in influencing the uptake and sustainability of knowledge sharing amongst the respondents. Factors of technology and processes were centred on facilitating opportunities to share and ensuring effectiveness and efficiency and are thus reported to have a significant influence on enabling and sustaining knowledge sharing.

People, process and technology factors that emerged indicate that knowledge sharing as a process is not yet well established and thus the factors for the formation and growth of a knowledge sharing network of aligned interest are important. This is why nurturing a culture of knowledge sharing, leadership, and support have emerged as human factors. Technology factors relate mainly to the provision of suitable IT and support, and process factors are centred on identifying and creating opportunities to share, as well as making provision for sharing as a core responsibility of the academic staff. Factors of institutionalisation affirm the need for a certain level of formalisation in the higher education context.

The culture of the institution has determined its entrenched behaviour. Management are tasked to embody the leadership skills that are required for the gradual assimilation of the principles of knowledge sharing in the institution. Management support is a very important factor, as leadership is key in the promotion of the value of knowledge management, identifying opportunities to share and developing metrics for assessing the impact of knowledge sharing.

Knowledge sharing strategies should adopt a hybrid approach, employing personal interaction approaches and technology-based approaches. The approach to knowledge sharing is context driven and designed around the shared culture of the institution. The academics must be consulted on knowledge sharing strategies so that these strategies complement the culture of the institution.

The outcomes of this study have contributed to the development of a comprehensive framework of factors influencing the formation, growth, stability and institutionalisation of

knowledge sharing to guide the development and implementation of knowledge sharing strategies in higher education.

7.7. Theoretical contribution

Much of the literature on knowledge sharing factors, particularly in a higher education context, has followed a positivist research paradigm. Surprisingly, knowledge sharing is considered as having a strong social influence, yet these studies tended to ignore the highly contextual nature of such studies in determining these factors. This study, however, recognised the importance of context in having an influence on the study of knowledge sharing. In order to provide this contextual understanding, an interpretive case study methodology was employed. Using the actor-network theory, new perspectives were explored, thereby transforming the way that knowledge sharing factors are perceived. The study explored new areas of concern that generated an all-encompassing view of the phenomenon in the higher education context. The use of the actor-network theory also compelled the researcher to consider not only the human side of the phenomenon, but also nonhuman actors in a network of aligned interest for knowledge sharing. Furthermore, ANT compelled the researcher to consider various stages of analysis, rather than studying these factors in a more linear manner.

This is the first time, as far as the researcher is aware, that ANT has been used as a lens to study knowledge sharing factors in the higher education context, allowing the theory to be applied beyond the bounds of previous research contexts. The use of ANT together with the interpretive case study methodology has yielded a new and comprehensive understanding of the study of knowledge sharing factors from the higher education academics' perspective. It is a new understanding that has revealed that factors of knowledge sharing are not as simple as the literature shows them to be. By utilising a normative approach, this research looked at how knowledge sharing as an ideal can be achieved when taking into account the existing constraints. Hence, this study revealed factors for the formation and growth of a knowledge sharing actor-network to be important in the context of the study because knowledge sharing as a process is not established and as such is still at its inception. Furthermore, the culture of the institution, as revealed by the views of the respondents, has determined the suitable knowledge sharing approaches that should be employed, impacting on processes and technology factors. New understandings of the phenomenon also reveal that knowledge sharing factors change as the institution progresses through the various stages of the formation of the network of aligned interest for knowledge sharing, growth of the network, maintenance of the network and institutionalisation of the network.

7.8. Practical contribution

The use of an interpretive case study methodology gives practitioners a better understanding of the phenomenon under study as well as clearer view of how academics perceive the phenomenon in their context. This improved understanding can help practitioners design more appropriate strategies, policies and interventions, rather than basing these strategies, policies and interventions on universal conclusions drawn from research employing a positivist approach. By developing context-specific policies, strategies are more effectively and positively received and any unanticipated consequences or reactions are avoided. A comprehensive general framework of factors influencing the formation, growth, stability and institutionalisation of knowledge sharing was developed to guide the development and implementation of knowledge sharing strategies in higher education. The researcher also makes practical recommendations in light of these factors for implementation by managers on the institutional, faculty and departmental level. As a result, managers are able to drive the adoption and sustaining of knowledge sharing more successfully, keeping in line with the culture of the institution, thereby leading to successful uptake of knowledge sharing in the higher education context.

7.9. Research limitations and future research

Although this research has followed a rigorous process of analysis, the findings should be considered with caution due to some limitations of the research. The research utilised data that were collected from a single institution indicating that the findings cannot be interpreted for contexts beyond the institution of study. Future research could replicate this study in other higher education institutions to validate these findings and verify its external validity. Future research could also use quantitative techniques to further validate the findings in other higher education institutions. Quantitative methods of survey are more reliable and have higher validity than qualitative interviews and would improve the generalizability of the data. This research only focused on academic employees of a higher education institution. Future studies could look at including supporting departments, as it has emerged that they have an influence on the overall effectiveness and efficiency of the institution. It should also be noted that the institution under study did not have established knowledge sharing processes, and as a result the findings for an institution that already engages in formal knowledge sharing activities might reveal different factors. Future studies could compare the factors that emerge from such institutions with those institutions that do not have mature knowledge sharing processes. Furthermore, the dynamics of a UoT may be different to that of a traditional university. Future studies could explore these differences.

Given the novelty of this research and the scant use of ANT as a guiding framework in a study focusing on knowledge sharing, further studies should explore whether these factors

are in fact specific to the case or if there are overlapping factors between different higher education institutions. Further studies could also use a similar methodology in the corporate context. It should be determined whether the same research instrument will generate similar or different results for a different context.

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APPENDICES

APPENDIX A: INTERVIEW SCHEDULE

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?
2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?
3. What are the problems that knowledge sharing could address in your area of work?
4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?
5. What would you consider as influencing/ motivating factors on your decision to share knowledge?
6. Would your level of willingness to share knowledge decrease if it was not made compulsory?
7. How can knowledge sharing as a process be formalised/ institutionalised?
8. Do you think that academic staff should share knowledge?
9. Do you think that knowledge sharing processes should exist in the organisation?
10. Do you think that technology should be used to share knowledge?
11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?
12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?
13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.
14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.
15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?
16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?
17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?
18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?
19. What do you think could sustain knowledge sharing within your subject, department or faculty?

APPENDIX B: EMAIL INVITATION

Lee-AnneHarker

From: Lee-Anne Harker
Sent: 26 May 2014 12:02 PM
To:
Subject: Request for interview for research purposes
Attachments: Ethics approval letter for L Harker.pdf; Knowledge sharing interview schedule.docx

Dear colleague,

I am an academic staff member in the Business faculty at CPUT and a student in the Graduate Centre for Management, studying a Masters in Business Information Systems. I am therefore conducting research toward my thesis which focuses on knowledge sharing in higher education. I intend to interview academic staff members from each of the six faculties of CPUT over a four-week period from 27 May 2014 – 24 June 2014, and I have selected you to participate in my study.

I would hereby like to invite you to participate in my study as an academic staff member. I intend to interview you to obtain your views on knowledge sharing within your subject group, department and faculty. Kindly note that:

- Your participation in this study is voluntary,
- You may withdraw from the research at any point, should you wish to do so,
- The data collected via the interviews will be treated with full confidentiality,
- The results of the study will be validated with a sample of the participants in the study,
- An overview of the study will be provided at the commencement of the interview
- The time and location of the interview is at the discretion of the participant, subject to the availability of the researcher,
- The interview should last about 45 minutes.

I attach written consent from the CPUT HR director to interview the academic staff members of CPUT. Kindly peruse the contents of the letter which also provide an overview of the study. I also attach the interview questions for your perusal.

Should you be willing to participate, kindly inform me so that we can schedule a time.

Your participation in this study will be greatly appreciated.

Kind regards,
Lee-Anne Harker

APPENDIX C: ETHICS APPROVAL

To: Mrs Joy Fish
From: Lee-Anne Harker
Subject: Request to Conduct Research at
Date: 25 September 2013

I am an academic staff member in the Business faculty at and a student in the Graduate Centre for Management (Faculty of Business). As part of my Masters in Business Information Systems I am required to complete a mini thesis and would like to request for permission to conduct my research as it involves academics working at . My topic reads as "factors influencing knowledge sharing at selected tertiary institutions in South Africa". I have structured my research question to read, "What factors influence the knowledge sharing between higher education academics?" The outcome of my research will enable me to propose strategies to support knowledge sharing amongst academics in higher education institutions in South Africa

In conducting my study, I intend to interview a junior lecturer, lecturer and senior lecturer from each of the six faculties of . After summarizing the findings of my study, I will validate the findings by requesting participants in the study to check the findings and the findings will be shared with the university.

I assure you that my research will be conducted in ways that meet ethical standards.

My proposed research will not only benefit academics within the institution, but higher education at large.

May I kindly obtain your approval? If you agree, kindly sign and put an official stamp below and keep one copy for yourself and provide me the other.

Your approval of this request will be highly appreciated.

Yours Sincerely,

Lee-Anne Harker

☑ I authorize Lee-Anne Harker to conduct the action research project described above.

Name and Title: Joy Fish Acting HR Director	Date: 1/10/2013
Signature: Joy Fish	

APPENDIX D: INTERVIEWS

Respondent 1
Faculty: Business
Department: Internal auditing and information systems
Level: Junior lecturer
Location: Respondent's office
Date: 19 May 2014
Time: 14:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Each level must take part in knowledge sharing.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   An individual, not necessarily management, that is knowledgeable about the work in general, can liaise well with staff. This person should have skills at various levels, including teaching and management.

3. What are the problems that knowledge sharing could address in your area of work?

   Lack of communication that keeps staff informed about current work. This leads to lack of harmonisation (operational autonomy). Communication should be deliberate. Often staff members do not remember to update each other. There is no systematic manner of accessing that knowledge which is needed. There is a need to improve performance. There is a lack of accessible resources (when you need something, it is difficult to find or can't find it).

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   There needs to be persons put in place to drive knowledge sharing that are accessible (do not sit on the top floor and never interact with staff). They need to get a feel for what people are doing and what they need. This person acts as a 'collector'. It should not be intimidating to approach them. Knowledge sharing should occur as small units of knowledge (e.g. after an assessment, prompt staff to answer a question about their experience or insight – knowledge sharing should be prompted, but should be manageable – staff should not feel overwhelmed by the task).

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   Knowledge sharing should not take a lot of time (e.g. smaller units), like helping people, get things to work better, like a system that works – if knowledge sharing can achieve this, staff will be encouraged to share.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   No, hate anything that is compulsory. There should be structure in the way that knowledge is shared, but it should not be compulsory.

7. How can knowledge sharing as a process be formalised/ institutionalised?

There should be automated prompts, and short, smaller, manageable methods of soliciting knowledge, such as surveys or short questions (like the assessment example). There should be processes in place that ensure that knowledge can be shared. There should be structure, such as systems that harness knowledge and there should be a search facility. Mobility in as far as accessing knowledge at any time from mobile devices can encourage consistent use.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes

10. Do you think that technology should be used to share knowledge?

    Yes (Comment was, yes, in capital letters!). This is the only way to make it easy to access.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    The processes to share knowledge should be in place. There should be a person with a 'listening ear'. If knowledge is to improve the way that we work, then people should be 'listening', particularly those that have the influence to effect change. There should be a paperless system. There should be easy access to knowledge to encourage sharing. There should be pointers to the structure – give people what they need and tell them how and where to find it. There should be a comments or complaints facility which leads to change.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Satisfaction of seeing that systems work. (Through improvement from sharing knowledge)

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    No, there should not be centralisation. The person put in place to run the knowledge sharing initiative might not be competent. There should be a system that is institutionalised and publicly available across the institution like a Wiki (public domain), that is self-regulatory. It should not be kept in the hands of one person but should be accessible by staff to update as needed and also enable searching.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Yes. People want to run everything themselves out of fear of being challenged or their value is tied to how much control they have. A self-sustaining and self-regulatory system eliminates power issues.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    Too much admin work. By shifting the responsibility to support departments or automating certain processes such as registration (or the automated update of MAS lists from Blackboard). Time constraints in meetings limit the level of sharing (long agendas or poorly run meetings where everyone wants to add to the discussion, sometimes prohibiting others from sharing. There are sometimes limitations to sharing based on those with a work in common and lack of a common tea break.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Lack of being able to identify with the institution – the way that they operate does not resonate with staff, so knowledge may be unsuitable due to the lack of alignment. Lack of trust in those that you are sharing with. Staff may not want to share because they are angry with the institution because of unfair treatment. Some people are closed-minded, not open to change. The fear of your sharing not being appreciated by staff and management.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    There must be an appropriate platform in place that suits the needs of the staff. The system must work and the staff that oversee the system must be competent. Generation issues where older staff might not be willing to use technology.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The lack of processes. The lack of notice taken by those in positions to effect change. If staff share their knowledge to improve processes, then there must someone to see the recommendations by staff to effect the changes. The feedback should be acknowledged and implemented.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    Consistent awareness of the need to share knowledge. A means to measure effectiveness of knowledge sharing, such as performance measures (like pass rates or other). Contributors should be able to check these and sharers should be able to rate management based on their responsiveness. There must be implementation.

Respondent 2
Faculty: Business
Department: Internal auditing and information systems
Level: Lecturer
Location: Respondent's office
Date: 21 May 2014
Time: 09:30

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Knowledge sharing should be undertaken at all levels.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   Identify a suitable person at faculty level. For department level the HOD, and subject level the subject coordinator. In general, there should be a Wiki that all staff should be able to access, update and use with no one person in particular running it. The aforementioned persons should be appointed for accountability purposes.

3. What are the problems that knowledge sharing could address in your area of work?

   Staff encounter different problems at different times for which they are seeking a solution. A FAQ facility should be available to provide solutions for these problems. If a resource that provides solutions to problems is not available, staff give up or don't get things done, as it is too much of a hassle.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   There must be support from management; otherwise people do not want to participate. Relying on emails as a means for disseminating information or knowledge eventually leads to information overload, as there is no structure. There should not only be a resources facility like a wiki or FAQ, but there must be personal meetings or opportunities to meet. Management must achieve the buy-in from staff through meetings, presentations, etc. There must be a personal touch.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   Coming from an industry background, I enjoy sharing my experiences from industry. Most staff enjoy sharing their experience, except for those who want to protect their turf. Ultimately, the motivation is that students will benefit from the improvements that come from sharing knowledge.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   Making knowledge sharing compulsory won't work. Convincing or encouraging highly educated people to share their knowledge by making it compulsory won't work as academics hate being pushed into a corner.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   Management must map out a suitable strategy and cement it by providing the appropriate tools. They should use a multi-pronged approach, i.e. personal interaction

and technology. They should be able to convince, not force staff. Institutionalisation is paramount, as it displays that there is a buy-in from management which is important for convincing staff that they should participate.

8. Do you think that academic staff should share knowledge?

   Yes, including people who work in support departments. In this way, support staff and academics can help each other to lead to overall improved efficiency and effectiveness.

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes. The processes must be designed cleverly. In other words, knowledge sharing should be quick and easy. It should not be boring or time-consuming.

10. Do you think that technology should be used to share knowledge?

    Yes, we would have to, so that we can work smarter, not harder.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    There must be technology that works and it must be in place before gaining staff commitment. Infrastructure must be prepared as a way to gain the buy-in from staff. Staff also need to be prepared in advance on how to use the tools.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    There would be a mutual benefit for staff that share their knowledge. Overall, there would be efficient work processes, which would prevent subsequent problems. There would be operational autonomy, in other words, liaising with support departments and other faculties, i.e. cross-faculty synergy (for example, the SAP programme that is running in the business faculty can also benefit the other faculties).

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    Centralisation would impact negatively on knowledge sharing. The only thing that should be centralised is management support, not processes.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Centralising would lead to power issues. In particular there are power issues between academic staff and from admin support staff too (supporting departments).

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    Technology that does not work. The environment and culture would also impact on knowledge sharing. There must be a nice strategy for knowledge sharing that takes culture into account.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    If there is enough encouragement and support from management, it will assist one to rise above the issues. Staff can't afford to complicate things.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The major issue concerning technology is the lack of reliability.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Management indecision, i.e. taking too long to implement decisions and strategies (processes) with no proper concept of what one wants to achieve. This leads to long lead times to effect change.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    Management must drive the buy-in of staff all the time. The network of knowledge sharing cannot grow by itself unless management continuously nurtures it.

Respondent 3
Faculty: Faculty of informatics and design
Department: Information Technology
Level: Junior lecturer
Location: Respondent's office
Date: 2 June 2014
Time: 12:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Knowledge sharing should be undertaken at faculty level. If knowledge sharing was departmental, it would make it too compartmentalised. Knowledge sharing should be spread out, as too much sharing is concentrated within departments only.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   Knowledge sharing should be driven by a person that already works in the faculty, in other words the role to drive knowledge sharing is in addition to their primary work. If their main job is to manage knowledge sharing, they would not have enough knowledge of their own about the environment. Subject coordinators should drive knowledge sharing in departments.

3. What are the problems that knowledge sharing could address in your area of work?

   Staff don't share, they are holding on to their knowledge. Work inefficiencies occur as knowledge must be sought out from the same people who hold on to it. For example, if a student queries something, it always results in sending them to find the answer from someone else. There is a lack of collaboration between subjects for academic benefit of the students. This impacts on the effectiveness of teaching, as integrative projects cannot succeed.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   Staff should be able to see the benefits upfront. In other words, you can see what happens when you do this. It should not be a pie-in-the-sky concept.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   Operational efficiency, less running around looking for this and that. With knowledge being shared, I would have more confidence in my job.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   Making it compulsory does not help. It feels like you're doing something with no recognition or payment. It is like adding more responsibility to the job without their being a benefit for taking more work on, much like being a subject coordinator. If you are perceived to be good at it, the responsibility will be given to you again just because you are able to do the job, but it does not bear any additional benefits.

7. How can knowledge sharing as a process be formalised/ institutionalised?

Workshops will not work. Knowledge sharing is slower in a workshop situation where everyone wants to have their say. It is more productive when sharing occurs between two or three people at a time. And someone that has learned from what has been shared shares it with someone else. It should also be facilitated online, as knowledge sharing will happen faster that way.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes, if there are no processes, it will not get done, because it is likely that someone is expecting someone else to do it. If knowledge sharing was integrated into the daily work, it would be expected from everyone to participate.

10. Do you think that technology should be used to share knowledge?

    Yes, there must be a centralised resource that everyone can access, such as making the knowledge available in 'the cloud'.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    It must not just be an idea. For knowledge sharing to be taken seriously after gaining staff commitment, there must be a combination of a person and a platform in place. Without a face to the initiative, the ball won't get rolling.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Transparency is a huge benefit. And knowing how your discipline fits in with another person, such as sharing between subject levels, as this affects how you do things, particularly for improvement.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    Our department was just dropped into a faculty with other departments we cannot identify with. Our courses do not relate in any way to the other courses offered in the faculty. If a department in a faculty can identify with the other departments, then yes. However, centralisation does not benefit a department, only the faculty as a whole. There should be sharing between academics and the support departments. For example, the printing department has moved to another campus without communicating with the staff.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Ideally, this should not be an issue at all, but some people are protective, each man for himself, or self-preservation. They want to make themselves indispensable. They should not feel threatened to share their knowledge.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    If I feel it will benefit me, I will make the time for it by cutting out unnecessary things.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    I do not like when responsibilities just get added because I have always said yes. Now I have a new motto for this year, learn to say no. At the moment I can't think of any personal factors that would prohibit me from sharing, however, if I take it on, and end up being the only person on which it rests later, then I will have an issue with it.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    I don't think that there are any potential technology issues, as long as staff have access to the resource at home, as most people have access to the network from home. The system must be accessed from anywhere, especially when some staff work from home.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Not everyone contributing because they have got people working in the same department and they may decide they won't do it because someone else will. We've all got something to share.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    Make knowledge sharing processes part of the main operational processes by integrating it. That way it won't just be a 'new thing' for 'now'.

Respondent 4
Faculty: Faculty of informatics and design
Department: Information Technology
Level: Senior lecturer
Location: Respondent's office
Date 3 June 2014
Time: 11:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Knowledge sharing must first take place in the department where academic staff are more comfortable sharing with their colleagues. In the departments, sharing must also take place in subgroups (like subject groups), and there should be sharing between different years, such as first, second and third-year subject levels. Sharing should also take place within the faculty, but this depends on the kind of knowledge that will be shared, as there must be a common interest because there are instances where topics discussed at faculty level are not relevant to all departments. There is, however, a breakdown in knowledge sharing between faculties and within the institution. This is because HODs typically meet at these levels, but fail to report back to their departments. They only share or report back on bad things or when something must be done. There is also no sharing between support departments and the academics.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   I don't know, but there must be sharing. Those involved in the processes should be sharing. Documents are not enough for sharing valuable knowledge.

3. What are the problems that knowledge sharing could address in your area of work?

   Trying to find something on the MIS was a problem because the steps to find it changed, and this was not communicated. I had to call someone and they directed me to the location of the information. This wastes time trying to look for relevant knowledge to do your job.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   Staff don't have a problem sharing, but because there are no core hours, this makes it difficult. The perception is that this is just a job, and it's 'my time', as opposed to viewing it as an academic environment where sharing on academic matters must happen. Bring in core hours. This has to be driven from the top. Incorporate core hours of 10:00 – 14:00. That way staff will not have made appointments elsewhere, and will certainly be available on campus during these times; otherwise there are fewer opportunities to share, especially because not everyone is available.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   I need to share, irrespective. It is not my knowledge, but [the institution's] knowledge, which I have acquired under my tenure here. I love sharing and uplifting other people.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   No, I am not affected by attitudes to something being compulsory.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   A regular formalised meeting on teaching practices and curriculation must be scheduled on the timetable. For example, we need to discuss new policies and how it affects us. There should be a tea room thing or domain thing; it cannot be driven by the department, but by smaller groups in the department. Knowledge sharing can be integrated into operational processes, but in smaller groups.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes

10. Do you think that technology should be used to share knowledge?

    Technology should be a backup, but not the main driving force. It does work, but do we have the time? Not too much technology must be used. Choose something that works for the situation, something that is effective. In terms of time, staff will use the technology when they have core hours and need to be on campus, instead of thinking that my class is done, so I'll leave immediately. Then it seems that they 'don't' have the time.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    Knowledge sharing opportunities must be timetabled.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    My aim is to whet someone else's appetite for knowledge. This makes them want more knowledge, making that knowledge significant to them.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    Centralise knowledge that impacts on everyone. Decentralise that knowledge which only pertains to certain people. Centralisation should only be applied to the location and access to knowledge.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Yes, you get this is every department. People don't share knowledge and we start the processes again when they leave. You have to pull the knowledge out of people. They need to know that they are valuable to the institution. It is a mind-set. It is only 'pure' academics that share their knowledge.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

Time constraints, deadlines, admin, the academic is inundated with silly stuff.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    There are some people that you just can't share with. In order to share knowledge, you need to first build relationships. You must first build trust. Once you are able to gain someone's trust, they trust your knowledge. When they trust you, you can also say 'I don't know', and that would be okay, and this will encourage others to help and share.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Not everyone is tech savvy, so you lose out on the benefits. When technology does not work, it creates a barrier to sharing, as it is useless. You have to be careful with what you've got with technology. It has got unforeseen circumstances like viruses. And, if you don't make backups, it's gone. You have to get the basics right.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The biggest process issue is time. Even if the process is in place, outside factors influence the process. For example, there is an assessment process in place. So when the timetable is set, assessments are set and all plans are in place, it is useless if an outside factor, like the rail service being delayed, results in having to reset the assessment. So, if staff have to make arrangements for missed classes due to public holidays, etc. they make this a priority over knowledge sharing.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    You have to have an interest in it to make it work. For example, the curriculum officer thing works now because everyone must re-curriculate, but no one will be interested in curriculation matters after. It is the same thing with research. Staff require a master's degree for their job, but once they've got it, they are not interested in research. You are only really going to buy into something if you have an interest or you get something out of it.

Respondent 5
Faculty: Engineering
Department: Electrical, electronic and computer engineering
Level: Junior lecturer
Location: Respondent's staff room (at request)
Date: 3 June 2014
Time: 13:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Knowledge sharing would not happen in parallel (at all levels). First sharing must take place within the department between colleagues that are doing the same thing that I do. A drawback to sharing through personal interaction is that it is not documented. If it was documented, it extends sharing to other departments. Inter-faculty sharing is required less frequently and inter-managerial (institutional level), even less frequently. There is a hierarchy to knowledge sharing, where academics share with the HOD first and this gets filtered up to higher levels of management.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   It should be a character idea, rather than a 'sticker' idea (Instead of just giving someone a title, it must be a part of who they are and they must identify with the initiative). You need to get buy-in. Staff want to create protected knowledge. Management needs to encourage staff to be confident enough to share. HOD should establish a culture of sharing, in other words instil in staff that it is okay to share, and they should put structure in it.

3. What are the problems that knowledge sharing could address in your area of work?

   It would help me to be aware of industry needs, to be able to solve problems for industry at an academic level. Knowledge sharing would help me to determine the knowledge that is relevant, current and useful to people that employ the students. It will ensure that students can do what is expected from them. It would help me to stay current, especially in fields that rapidly change, such as computers. You only hear from people in an email, but never get to meet them. There is a lack of social cohesion, which impacts on the level of sharing.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   Make it so that staff are more comfortable being around each other by creating an environment where you want to be and interact. Avoid creating ant hills. Knowledge sharing is easier to do with younger staff members and use technology with younger staff to interact. Senior people need to say that it's okay to share with them on an informal level; otherwise junior staff are not sure if they can share with them.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   The staff room should be an attractive environment where staff want to be and this will lead staff to talk to each other. For example, they should have comfortable couches, decent coffee, and a comfortable space with an Internet connection. Staff are more likely to be in the staff room than in their offices (silos). There could even be a departmental phone app to contact staff in the department to share something, but locked for certain staff only.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   It would impact negatively due to work loads. We don't need another form to fill in. It is the worst thing that can be done. It will make people resentful. There should be incentives such as those who have contributed the most should get a prize.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   Technology can be a great facilitator to make the process possible. Staff can for instance post on a forum that goes into a database as part of a review process, such as things to consider when reviewing research guides. The knowledge can be segregated in 'boxes' such as on your desktop according to relevancy to certain areas of work for sharing ideas. There should be a system for logging thoughts.

8. Do you think that academic staff should share knowledge?

   Yes, amongst them, as they are more inclined to share knowledge on topics they have in common. I prefer getting the knowledge I need, or else I will tune out. Knowledge in a system must be 'pushed' to the relevant people, and there should be an option to pull knowledge you also want to find.

9. Do you think that knowledge sharing processes should exist in the organisation?

   In an academic institution, yes, this environment is about sharing knowledge. There are informal and formal methods of sharing. Research is a more formal method of sharing knowledge, so other forms of knowledge should be shared more informally. However, intellectual property must be secure from being exposed to external parties.

10. Do you think that technology should be used to share knowledge?

    Yes, one of the easiest ways to share, immediate, accessible, easier to implement but not necessarily easy to get people to use it.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    The institution should take a lesson from a company like Google, where staff are allowed space in their day to work on their own projects. This can't happen with a heavy work load. It must be scheduled.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Sharing is its own reward for me to go to someone and show them what I've discovered enhances a feeling of satisfaction, and it's fun. I can also show them how they can do it.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    Knowledge needs to be structured in a formal knowledge base with intelligent agents to improve access to that knowledge. Higher levels can enforce structure, which is achieved through centralisation.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Power issues will always be there and needs to be addressed somehow. Establish a situation where these issues won't come up, such as letting sharing happen lower down where sharing issues is not a problem, as opposed to where it could be a problem, such as at management level.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    Lack of any real guidance on what to share, how to share and what is appropriate to share. There needs to be clear guidelines.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Engineers want to project a certain level of professionalism. They are more inclined to share successes than failures, yet you learn more from failures. You must be confident in yourself to do that.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Difficulty in accessing the network, particularly while on the go on campus, such as a lack of Wi-Fi connectivity. It is difficult to access resources when I am moving around. For example, I can't access my email via my mobile device because knowledge on how to set it up has not been shared. I have a good technology skill level, so there are no other factors. I just find a way to work around the problem.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    There must be convenience, people don't like to change what they have been doing and the knowledge sharing process should not detract from that. It should not move people away too much from the norm and it should not take too much time.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    Get the students involved somehow. If you get buy-in from an individual, they must believe it is the right thing to do and it must be easy to do it. To make anything last is difficult. Knowledge sharing for the sake of knowledge sharing is not enough – it should be of benefit to the students. Sharing with the students on knowledge you have picked up on can improve your subject.

Respondent 6
Faculty: Engineering
Department: Electrical, electronic and computer engineering
Level: Senior lecturer
Location: Respondent's office
Date: 3 June 2014
Time: 14:15

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Sharing must take place on all levels. Some knowledge between departments and faculties are linked and there are some common structures.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   Academic staff and management, particularly those who are still academics, as they have the best perception of what academics need.

3. What are the problems that knowledge sharing could address in your area of work?

   People are not open. They are shy and think that they are exposing themselves if they share. For example, some staff are not comfortable with other staff coming to their classes, and it should not be that way. There must be constructive criticism and staff should be open to this. You must expose yourself in order to learn from your mistakes.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   If we openly discuss problems with each other, it must start at departmental level and then proceed to higher levels. That way staff feel that they are understood and feel free to share. It will eventually grow to other levels.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   I like to share with other people. I want to learn from them either through their criticism or them adding to the knowledge. The aim is to learn.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   Personally, I like to share irrespective if someone pushes me by making it compulsory. My ideas can build other staff up.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   In our department/ faculty there is a subject review to have a discussion with those people that have had problems in their subjects. These people, however, feel guilty/ exposed when they are called to the review, they get defensive. Marks review must be open to everyone to share their ideas on how to improve performance. They defend, rather than share openly.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes, if it is within a subject, there is a need to share, it is compulsory. For example, staff within a subject need to share on what they have covered, the problems experienced, what has happened. What their views are of the work. It should be part of their planning for their classes, instead of reaching the end of the quarter and the problems arise because they have not shared on their progress and planning.

10. Do you think that technology should be used to share knowledge?

    Yes, it could be helpful between staff, but not students, particularly if they don't have access so knowledge sharing must not be limited to technology. Sharing must have many different platforms, not only technology. And, when using technology, it should not be a burden, such as having to contact the help desk or go to the help desk to get something to work.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    In terms of technology, there must be permanent people in place to ensure that it works and to monitor the system. People continuously complain about printing issues, the network issues and problems. This creates an attitude toward the technology. If there is appropriate support in place, it will garner staff support.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Want to nurture someone to be like me, so that if in future I am not there, my work and legacy must continue.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    It can be both positive and negative. On the negative side, people don't want to mix, and this would mean that they must come together. On the positive side, you will learn a lot and grow.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    It would depend on who heads it up. If someone is heading something they want to run it their way, even if other people offer their guidance, goods ideas get ignored.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    Time! Something we don't have, even in our department it is rare to find people sitting in the staff room, discussing and other people don't see the need. There must be a neutral venue to meet and share ideas.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

I don't have personal issues that will stop me from sharing. If you are selfish, it does not matter what level you are working on, you will still be selfish. I don't have any confidential stuff to hide, so nothing will stop me.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    A lack of skills, as most don't have all necessary skills. Timing of training is usually not good, as it usually clashes with classes, for example.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    A lack of organisation impedes on all processes.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    People should be rotated, as people want to stay in their comfort zone. New area, new knowledge to share. Being in the same position for long gives you the idea that you don't need to learn anything else.

Respondent 7
Faculty: Engineering
Department: Electrical, electronic and computer engineering
Level: Lecturer
Location: Respondent's office
Date: 4 June 2014
Time: 13:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Knowledge sharing should happen at all levels. Yes, there is knowledge that is subject-specific, but there are also techniques, standards and levels of efficiency that should be shared at all levels, just general knowledge around professionalism.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   The HOD should drive knowledge sharing.

3. What are the problems that knowledge sharing could address in your area of work?

   There should be sharing on technical knowledge, hard-core electrical engineering knowledge for our course, just on how to tackle the subject and other little bits and pieces of knowledge that each person has to share.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   I'd like to know about bits and pieces of knowledge of what someone is doing and how they are doing it and to assess it to see if how they are doing things will work for me.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   Just that it should be in the best interest of the student.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   It could decrease if it was not compulsory. I am not averse to it being made compulsory, not until a point that someone starts interfering with me about it.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   It should be driven by the HOD. And the idea should be followed by meetings, which should have a point to achieve, and the laying down of the rules.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes

10. Do you think that technology should be used to share knowledge?

I don't use technology. Maybe I'm resistant. I don't think it should be used.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    There should be meetings, and perhaps an invitation to staff to share their ideas or something new with other staff, as we like to share and we enjoy it. In addition, there is nothing else, apart from it being driven by the HOD.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    It is self-fulfilling.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    Negative. You lose direct contact with the HOD. It's like going a step further away. People start acting like power maniacs. They usually just start instituting systems.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Yes, people who like power often are more into power than progress. They would be more interested in exerting power than moving ahead.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    Time, but it depends on one's timetable and amount of preparation, or whether they are on contract. Some people teach more than one subject or have to prepare for a subject they have not taught before or are familiar with. That's why it's up to the HOD to make a plan.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    I don't have personal issues that will stop me from sharing.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    It is difficult to handle technology as it takes time and preparation. All I need is chalk and a black board. Electrical engineering is technical and needs nothing else to teach. Learning how to use programs is an issue, and so is the Internet connection, etc.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    If people aren't into it, it won't matter what processes there are and if the HOD doesn't do his thing, it won't work.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

If it becomes part of your work environment, it will naturally sustain itself and if it is a generally accepted thing. Having shared offices and social get-togethers makes it easier to meet up with colleagues, rather than those who are alone in an office, which is locked most times and they leave straight after their classes. When you have opportunities to interact, you can swop experiences and what's happening.

Respondent 8
Faculty: Faculty of informatics and design
Department: Information Technology
Level: Lecturer
Location: Researcher's office (at request of respondent)
Date: 9 June 2014
Time: 12:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Knowledge sharing should take place wholly in the university. Certain knowledge only should be shared across all faculties, and certain knowledge within and between departments. Not much in knowledge should be shared across all levels.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   We as academics should be engaging in knowledge sharing. There should be platforms, as sharing is currently taking place on an ad hoc basis. It doesn't have to be too formal, but must be a platform for sharing, or else it won't take place. An enabling environment but not necessarily managed.

3. What are the problems that knowledge sharing could address in your area of work?

   We do have some workshops to share our approaches to our subjects and to assessment. How they handle and package the content. Not many people attend sharing sessions. How we carry out our subjects can create inconsistencies, for example one subject can be taught by many lecturers using different approaches.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   Create an enabling environment. Other people don't want to share knowledge because they feel they are not rewarded. For example the distinguished teacher award encourages people to do their work better. People do not share because they haven't been asked.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   Recognition - for example the distinguished teacher award. Also, if someone is doing good work that we can use in our situation, I would be interested in using it. I would like encouragement from others, it mustn't be forced. I feel that by talking to others, I will learn.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   If I want to share, I will share. Making it compulsory won't be an influence. If you want to share, you will.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   Bringing in formalisation on the whole process might impede on knowledge sharing because people are not prepared to share if they feel they are being forced. There could be a level of institutionalisation in the sense that it is promoted as something that

is needed or that this is something that is going on and taking place at this time or in these ways.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes, for it to happen or else it won't happen, but depends on how we make it happen. For example, a form of recognition should be incorporated.

10. Do you think that technology should be used to share knowledge?

    Yes, technology will play a critical role to share as it provides different platforms.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    Recognition – that they're doing some good work but won't guarantee that people will share.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Being recognised that I was able to come up with a solution and was part of crafting that solution.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    It depends what we're trying to share. If it is sharing at the institution level, then it must be relevant to all. Anything that is discipline-specific should not be centralised.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    It could if people with power end up exerting their power, using power to enforce knowledge sharing, for instance. This just ends up in forcing people to do it, which should not be the case because it should happen naturally.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    It would depend on the amount work that you have in order to make time. The ultimate goal is always to deliver lectures. So it is about whether I can still deliver what I can. But the knowledge sharing must be evaluated to see if it still works – things change, such as the type of student that we have.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    When it must happen could potentially influence my willingness. It must also not be too prescriptive.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Issues of software compatibility – features must link to the intended use. The availability of the network is also an issue. One becomes frustrated with trying to access resources until you just leave it.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    It depends on how we have structured sharing. It can have a negative impact unless people are prepared to use it, such as being too prescriptive. There must be freedom in use.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    It should be part of how we work in day-to-day operations, as it is not only you that knows everything. How I operate is impacted by how other people operate (operational autonomy).

Respondent 9
Faculty: Applied sciences
Department: Chemical engineering
Level: Lecturer
Location: Respondent's office
Date: 10 June 2014
Time: 11:30

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   At all levels. I try to get people to share knowledge in the department, which involves regular meetings once a week to discuss content through all levels, teaching and learning methods, information literacy, re-curriculation and graduate attributes. This is what should be discussed at departmental level. At faculty level, some sharing takes place, but usually amongst the minority. For example, if you are a teaching and learning representative or a curriculum officer, you will attend faculty-based meetings and managers attend faculty-wide meetings. However, faculty-level sharing should start with induction of new staff, but any more sharing at this level becomes too much. The reps and managers that attend at faculty level are not filtering the knowledge down to the departments; this is why I have these meetings with the staff as a curriculum officer. You only need a representative to attend faculty-wide meetings, but they should be able to filter this knowledge to other staff. Institutional goals at faculty level are always filtered from top-down to departmental level, but this should be the other way around. Knowledge sharing should work from the bottom-up.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   HOD support is definitely required, but the HOD should not necessarily be the driver. Being a teaching and learning rep, you help to make decisions, but you can't enforce it because the departments are not interested. This limits your reach of influence.

3. What are the problems that knowledge sharing could address in your area of work?

   At the very basic level, meetings take place to share knowledge, but academic staff get stuck on the same issues, and don't get through the entire agenda. This is why if proper knowledge sharing is to take place, the best approach is to get an external facilitator to address operational knowledge, but the institution no longer pays for this. There needs to be regular reviews of subjects in terms of the content and what industry needs. Communication is also important. Often there are people that attend meetings but do not say anything but might have something valuable to contribute. There should be workshops to strengthen communication.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   The institution should look at the workload model. It must take into consideration admin work too, as knowledge sharing would be considered as additional administrative work. Staff compensation should also be considered. For example, there are certain tasks that are not considered as part of the work load, such as being on the board of a professional body. You have responsibilities there which are not recognised. Compensation could be in the form of the assignment of a research assistant for three months for example. Being a member of a professional body also constitutes knowledge sharing, but between the institution and industry. This should be recognised.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   I had to replace someone as the curriculum officer. I did not have a choice. It took me six months to catch up with what was done by the previous curriculum officer. At some point I had to get staff involved in the re-curriculation process. We had to have meetings once a month, only to speak about academic matters, such as subject content and development and how to teach it. We also incorporated an information literacy policy. The only way that I could get the job done was to get staff to share their knowledge. It was about ensuring consistency and quality in the programmes. There had to be consistency between different levels and between similar subjects, so that students were not doing the same content in different years. There shouldn't be repetition. This also ensured that there was a flow between subjects and that they met subject outcomes.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   If I was not doing re-curriculation, I would not be doing this, as it is a lot of work. It is not something that is tangibly recognised in the workload model.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   I don't think we can be able to do it. Knowledge sharing should be broken down into various sections such as department, faculty and institution. And it should be phased in. For example, once a year academic staff should look at their core curriculum and whether it is still current. In a sense we do have a process of knowledge sharing in place where we have a file that is updated with a record of what is done in a subject, including assignments, assessments, etc. This is however a manual system. So the sharing is not necessarily between staff. If it is identifying problems, such as the early warning system (identifying at-risk students), then yes there should be a formalised process. But then admin staff should be added to assist with the administrative side.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes, but restricted to start at departmental level and move up to faculty level instead of the other way around.

10. Do you think that technology should be used to share knowledge?

    It is a useful too, but it should not be the beginning and end of knowledge sharing. I prefer to have a conversation than send an email.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    The workloads should be considered more realistically. Also, there is a disconnect between the institution and the goals of the academic staff. For instance, we run classes during the holidays for students, and they need books for this but can't afford them. We obtained external funding, but the institution did not support this as they believed that it set a precedent. This shows the disconnect between what we as

academic staff want to achieve and what the institution wants. When you are trying to help you get cut off at the knees.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    I am a person of my word and will do my job to the best of my ability. In a sense, it is personal growth.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    Centralising can be a bad thing. For example, there is a quality department that collects the student evaluation forms for capturing, but we don't receive any feedback from them. I would rather prefer to have a conversation with my class about how they are experiencing my subject. I have first-hand feedback and I draft a report based on this. Centralisation in the sense that the institution oversees knowledge sharing and controls how knowledge is filtered down is good.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Yes, top-level managers are like dung beetles. They control and protect their work, even if it was a collaborative effort, they take credit for it. It will eventually filter down to other staff and everyone will start doing it so that they are also able to gain recognition.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    Workloads and staff attitudes - in other words, whose responsibility would it be? (Staff usually just say "so and so can do it") The HOD attitude is also important, if there is not support, nothing will happen.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Not everything that I do shows as part of the workload, only what appears on my timetable, so the work just piled on. The HOD must show support by give and take. For example, supply an assistant to take on some of the admin work or a Master's student to help with marking practical work.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Too much reliance on technology can be bad, as this will impede on communication and sharing. The bad can be in the way that people choose to use the technology. For example, emails can be good and bad. It can ensure immediate communication but can't convey a message in the way that it was intended. So the success lies in the way people choose to use it.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Staff need training on how to conduct a meeting. Staff harp on the same issues instead of getting through the points on the agenda. We need a good person to chair the

meetings. Also, the process must be changed from top-down to bottom-up because when the knowledge is shared at faculty or institutional level, ultimately nothing reaches the bottom.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    We need a strong person to drive the knowledge sharing – the right person that understands the processes and it must be pitched at different levels to different departments. Put staff through formal teaching courses, as they will learn what good methods of teaching are. Most academic staff are not true academics, but a person of their field. If they understood that knowledge sharing can be part of what constitutes 'good practice' then they will do it.

Respondent 10
Faculty: Applied sciences
Department: Organic chemistry
Level: Junior lecturer
Location: Respondent's office
Date: 12 June 2014
Time: 10:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Knowledge should be shared within the department on everything, including record-keeping (what to do, where to find it) about subject knowledge, staff development. In the faculty there should be sharing on staff development. Sharing should be aimed at growing the department. Sharing should work from the bottom-up and should also be bottom-down, or else it won't work.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   The head of programme. There should be one person to lead. At the same time lecturers should be responsible for their own 'space'. They can't expect the head of programme to run around after individuals for stuff related to their subject, you must look after your subject.

3. What are the problems that knowledge sharing could address in your area of work?

   Record keeping – if you are looking for a book or course work, what you need should be available within the department, there are things staff should know, basic things should be available and clear to new staff.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   Understanding of each other on a more personal basis, or personal interaction, and staff should want the department to succeed as a group, not as an individual. The department should run team building sessions to address issues and to ensure that we work as a department.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   Personal growth and development. If you focus only on what you do, you won't grow. You need other knowledge to come to you.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   No

7. How can knowledge sharing as a process be formalised/ institutionalised?

   It must be part of performance measurement. At the moment only things like pass rates measure performance. There must be a link.

8. Do you think that academic staff should share knowledge?

Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes

10. Do you think that technology should be used to share knowledge?

    Yes, we are a university with no use of technology, yet there are schools where tablet PCs are used. We don't even have the basic technologies in place (example Wi-Fi access). Technology should be brought in more strongly.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    Progress meetings should be held within the department on the development of knowledge sharing.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Growth, and the more knowledge you have, you become better at what you do. Academics always have to be a step ahead.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    Positive. It will enable me to get to know what others are doing in other faculties and to be able to apply this to what I am doing. It helps me to recognise your weaknesses.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    It will have an influence. In our department there are management that have these issues, yet they do not teach so they do not know what we need.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    A lack of technology. We are still old fashioned. Time does become a problem when you are also doing research, but time should not inhibit sharing if it has benefits to us.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    No.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The lack of technology is an issue. We do not have it in the first place and we struggle with old technology that does not even work (overhead projectors). There is not enough technology to support staff.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The lack of management of the process. If we started now, we need to ensure that someone else will be able to take it up if we leave, and will be able to access the knowledge to sustain the knowledge sharing. Everyone must play a role and understand its importance.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    Record keeping about how, what, where, so that the next person (someone new) that comes can go to the 'file' and can see what to do, especially if someone does not tell them (handover). Responsibilities should also be rotated so that others have a good idea about how it works.

Respondent 11
Faculty: Health and Wellness sciences
Department: Wellness Sciences
Level: Junior Lecturer
Location: Respondent's office
Date: 12 June 2014
Time: 11:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Knowledge sharing should take place on all levels. The faculty and department must have a policy to say how and what must be shared. This will maintain uniformity, but still encourage creativity in the department. Each department is also different, so sharing should exist within the department on discipline-specific knowledge. Faculty-wide knowledge on research principles and methodologies is universally applicable knowledge to all departments.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   Individuals within the department should drive knowledge sharing. If staff love their department and have pride in their work, they will share. For example, when we work on curriculation, we need guidelines on how to curriculate our subjects, as it is a struggle to develop new content without academics sharing their knowledge on this.

3. What are the problems that knowledge sharing could address in your area of work?

   We need sharing in terms of content for curriculation. There is also no sense of leadership. There is a lack of handover when a new academic starts in a job. Even though there is an induction process for new appointees, it is very generic and they talk about institutional-level processes, but this does not cover the work you must do in the department.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   There should be incentives pertaining to research. Knowledge sharing can develop you personally when others are passionate about teaching and learning and share this knowledge with you. Admin is a killer, so there should be incentives for alleviating the load. And knowledge sharing can address the issue of staff continuously having to reinvent the wheel.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   If it was a safe environment in which to share knowledge and staff share the same goals, but people have hidden agendas and attitudes problems, particularly amongst closed groups or cliques.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   It depends if you are a leader of your field. Unless it is a forum where everyone was sharing, I would do it if it was mandated.

7. How can knowledge sharing as a process be formalised/ institutionalised?

Forums, committees, advisory boards – it must be on agendas and there must be specific topics on which to share knowledge so that it is structured.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes, there must be sharing on fundamental basic things that I need to make my job easier. There should be sharing on processes, how the department works, as usually there is a delay in finding what I need.

10. Do you think that technology should be used to share knowledge?

    Yes, I love technology, but it depends on who you're sharing with. Technology saves time. But we must be careful what we share, due to confidentiality.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    Usually there's no time to attend, say, meetings, even though you are interested. I don't know what must be done, but there is a massive knowledge gap to be filled.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Growth, developing, being enticed to find out more, and doing something more with what you have learned.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    It would be fabulous, but it depends – some things should be centralised or standardised from there it should be split by department or discipline so that you are not feeding knowledge that other people don't need to know.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Absolutely, normally it's one person that shares because they think that they know everything. There must be two-way communication in place of one person, that way you can learn new things and improve.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    A negative environment could impact negatively on me sharing knowledge. People must see that we are here for the same goal. The cliques and negativity is my challenge. They don't share unless they have a relationship with you. They inhibit you by not sharing. We should have one goal in our department. I won't sabotage anyone.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    No, I am more than willing to share, in my field there is a need to share, and it's a wonderful opportunity.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Access to technology and accessibility to training. Can they engage? Are they willing? Is there time?

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    When people go on power trips, it can hold up the process. There are also time factors related to organising the opportunities to share. How can I interpret the knowledge for my situation? How do I find time to do it? It depends on what you want to achieve, otherwise people won't do it. They won't find a need for it and there's no urgency unless it is regulated. Putting people in a box limits them. But there must be a culture for sharing. It's better to share in an informal setup, as there is not threat to you and you won't feel intimidated.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    It should be structured, a way forward. It must be split up in terms of areas of interest – so you share based on what you are interested in.

Respondent 12
Faculty: Education
Department: General education and training
Level: Junior Lecturer
Location: Respondent's office
Date: 12 June 2014
Time: 14:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Knowledge must be shared at all levels, because we are academics or because of the nature of the job of an academic, we require academic and administrative knowledge to be shared to drive the faculty and institution.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   From my perspective (in this faculty), we as the lecturers, or specialist that will be standing in the class, should be the drivers and by our own motivation should share knowledge but this does not often happen like that . Seniors (HOD) must also drive knowledge sharing, and if it is not happening, they should motivate staff to share.

3. What are the problems that knowledge sharing could address in your area of work?

   I feel we work in isolation. We are sending out students that will teach in different fields and often what you are dealing with is related to other subjects. I would like a forum to share what I do in my subject, to avoid repetition and students from becoming bored because what they are doing in one subject is similar to that of another. There could also be a clash between what is done between subjects.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   I think the more we talk about it, the more we will motivate and encourage and open people's eyes to the benefits to avoid compartmentalisation. There is usually a common thread running through courses that must be considered and staff must show appreciation for someone's field as a result.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   I've always been a teacher. My biggest thing is simply knowledge. In everything that I do, I try and let the students see connections between different fields. We simply cannot compartmentalise knowledge. We must show students how the thread runs through subjects.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   It depends on the way it is done. There is a move on this campus to tighten administration. If I leave today, I would be concerned about documenting what someone else needs to know. I'm going to worry about this. I, however, didn't use the previous person's notes, some are no longer relevant. One must keep a hand on applicability of knowledge to the next person if you are going to keep a record of what you have done and how, only then is record-keeping a good thing. By making it

compulsory, you have to be careful about what format it will be in and keep in mind that someone else will have their own take on it.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   We must get away from storing in files of paper. I'm very much aware of my carbon footprint. It should be integrated into daily work, such as teaching and learning processes that have been incorporated into the learner management system. This is part of our work and so should knowledge sharing become part of our work.

8. Do you think that academic staff should share knowledge?

   Yes. Because we have such hectic work schedules we don't do it. We used to have a slot during the week to share on research and practices and we were encouraged and we had an idea of what our colleagues were doing.

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes, knowledge should be shared on a regular basis for us to reflect and learn from one another. If you work in isolation you could continue with your bad habits.

10. Do you think that technology should be used to share knowledge?

    Yes, but certain age groups become nervous about technology, but once we are given the opportunity to get to grips with it, it can certainly bring advantages to our work.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    Again, if I use the example of the learner management system – it fits my philosophy to reduce my carbon footprint and it saves me time and reduces my administrative work, so should any knowledge-sharing platforms that are in place. If it can satisfy these requirements, then it will fit my needs.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Due to the fact that I am a teacher, I am a person that drinks up knowledge. I believe in knowledge sharing, every opportunity I use to find knowledge I didn't know about, it encourages me to think deeper.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a <u>negative</u> or <u>positive</u> impact on the support and preservation of knowledge sharing? Elaborate.

    I'm two-minded here – on the one hand we need a continuous flow of knowledge we want to pass on within the university. However, I'm also of the opinion that someone that drives this will force us to share knowledge. It must not be an exercise in admin (or window dressing). Knowledge must be dynamic and people want to push admin to the point that it is a burden. For example, we were audited recently, and we were required to compile files that documented what we do in our subjects. However, no one else ever looks at these files.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

Yes, I have come across this personally. When you are enthusiastic about research and teaching, for example, and you share your ideas in a forum, then to your horror, realise that someone has taken your idea and reaps benefits from it. It's nice to be acknowledged and knowledge sharing must be used but if it is used, acknowledgement must be made of those who have shared their knowledge.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    The biggest factor will be the relationship with fellow colleagues, for example someone that works in isolation cannot see a holistic approach. Someone new will bring new ideas but it but it gets frowned upon by those people because they feel that 'this is how we do it' and we're not changing it.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    I'm sensitive to recognition of ideas and sharing (especially the time spent on it). I don't like being ignored if I have a good idea; I'm very sensitive to that as well.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The fact that technology moves so fast, especially over the past 20 years is intimidating to older people. When we started teaching that time, we found it intimidating to use a video cassette. With the burst of technology we have experienced, we have found it difficult to keep up with it. When you are older, it is a mind-set. Younger people 'speak' technology. Because we are sharing with younger people who are better at using it, it is intimidating.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    First of all, I don't like admin, so that should be considered. Secondly, if my colleague must investigate something and I must also investigate something that must be combined into a report, my concern is whether he/ she does it well enough to the extent that it will satisfy what I expect. So there is a certain degree of unreliability when responsibility is put on some people that cannot deliver.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    If you are at a university, anything that you do should be research driven as a means of continuous revision. We need encouragement to deal with issues to prevent knowledge sharing from stagnating. Opportunities must be created to deal with it to look at the problems. There must be an opportunity to share. There must be a culture of continuous reflection and review of strategies to carry forward new knowledge to share.

Respondent 13
Faculty: Health and Wellness
Department: Wellness Sciences
Level: Lecturer
Location: Respondent's office
Date: 17 June 2014
Time: 14:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   All of them. There should be sharing on best practice and re-curriculation. We share discipline-specific knowledge between all UoTs, this kind of knowledge can be shared between different levels, as being on committees, you see good ideas on how to approach assessment, moderation, etc.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   Definitely the HODs.

3. What are the problems that knowledge sharing could address in your area of work?

   With regard to students, throughput rates, and attendance – how do other academics address this and how do they deal with different students that we obtain every year.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   When you look at faculty meetings, knowledge is available. So these meetings should also be held at departmental level regarding research guides, assessment and moderation, work integrated learning. These must be standardised. Committee meetings are also important for this reason. We need to have different input. Best practice in one discipline can be applied elsewhere, so we should not think that we know everything.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   I've been at a lot of private institutions and what I've seen is that you will get left behind if you work in your own world.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   Yes, we have time limitations. Overall there should be a database that you can access to get what you're looking for. This is less time consuming, such as posting ideas on Blackboard. A place where all knowledge can be found and we can got there to find it.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   Refer to the above answer.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes. We do that in our department at meetings. We discuss issues on teaching and learning and it is taken to other committees. It is the responsibility of those on the committees to filter this knowledge to lecturers and other departments as an agreed-upon standard.

10. Do you think that technology should be used to share knowledge?

    Yes, it creates a store of knowledge.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    By keeping knowledge sharing standard. It should be a standard item on an agenda, this way it will always be discussed. If it is not standardised, nothing will be discussed. New things can also be brought in at the departmental meetings. Then the HOD takes it to the committees. Not everything will be applicable to all departments, but it should be on a 'take what you need' basis.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    When you start speaking up and willing to give, people start sharing with you.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    It can be abused, but in all cases it can anyway, but it is there to share, shouldn't be kept. It depends on how it is managed.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Yes, a lot of people think that their courses are the best and no one can tell them anything. This creates resistance to sharing and gaining.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    Workloads are very high and one of the restrictions to making time to share. There are always so many new things to consider and you are constantly trying to keep up. If there is a scheduled meeting, where a time is set, this would be better.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    I don't have any personal factors. I'm one of those people who believe in the good of the person, so I could be considered a bit naïve. But I believe that I can benefit out of sharing. A lot of people won't share. They will use it to further themselves.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

There are some systems in place to assist, but training is important. It's difficult to make the time for training, so as a result systems are not used to their potential, such as e-learning. The system seems great, but time is an issue.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Availability of staff to share and to be on committees.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    Presentations on what has been discussed, do workshops once a semester on new developments/ ideas, what have we forgotten that we learned a long time ago (refresher). Try to inspire people, as that keeps you going, motivation.

Respondent 14
Faculty: Health and Wellness sciences
Department: Wellness Sciences
Level: Lecturer
Location: Respondent's office
Date: 24 June 2014
Time: 09:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   All levels, they should all interact. A faculty person must know what is happening in all the departments and to ensure that there are uniform procedures.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   It would be great if there was one person in a faculty to facilitate that. Knowledge sharing must be undertaken for a lot of things, including research, quality in the department, community engagement, as well as student support. There should be one person assigned to each area of specialisation (or pillars of the institution that make the UoT), otherwise they won't master anything because there is no specialisation. For example we have a quality review from time to time but no one comes to the department to inform us of how to ensure that quality is maintained in our subjects and how we will be assessed. This person must engage with the staff in the departments, not just pitch up for a quality review once in a while.

3. What are the problems that knowledge sharing could address in your area of work?

   I'm new at this institution. Here they have an issue with knowledge sharing, no one wants to share. You must look for the knowledge yourself. People must understand that knowledge sharing is not for you, but for the success of the institution. By refraining from sharing your knowledge, you hold back the programme and your department.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   The faculty should have dedicated people to visit the faculties/ departments. A person that has been assigned to a specific area of work to engage with the academic staff and to ensure that staff know how to do the work they need to do. This institution does not have any structure.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   I don't have a lot of experience in research, but whatever experience I have from my Masters, I share with my students or my colleagues. This is a learning institution, so learning will only take place if we share.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   No

7. How can knowledge sharing as a process be formalised/ institutionalised?

There must be a platform for sharing knowledge with each other, for example with other UoTs or universities, to see how they are doing things. For example, how do they manage their clinics (somatology), or for those who have a good pass rate, how do they teach and encourage students to learn. There must be a facilitator.

8. Do you think that academic staff should share knowledge?

   Yes, but academic staff should have a platform, as we do not have any platform for sharing our knowledge other than sharing with students in our classrooms or our colleagues in our office.

9. Do you think that knowledge sharing processes should exist in the organisation?

   What I have said about having a representative or facilitator for each pillar within the faculty to drive the knowledge sharing, and to have a platform, this will ensure that there are ways to formalise knowledge sharing processes.

10. Do you think that technology should be used to share knowledge?

    Definitely, but staff can only appreciate this up to a certain level. Staff get tired of incorporating new technology before mastering the previous technology. It is time-consuming to learn how to use new technology.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    There must be someone to pioneer any technology or platform that is implemented. This will ensure that there is ownership over how staff are feeling about it and whether it is working. For example, with e-learning, if you want to know anything or get anything to work, you have to go and find out about it or sort the problem out. There should be someone to take responsibility for how things are working. For example, the IT technicians are not working within the departments, they are sitting together away from the departments and do not take ownership over what is happening in the departments. This should be decentralised.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Knowledge sharing reveals what you know and what you don't know. It helps you to realise your mistakes and what you can do to improve. It helps you to grow.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    Centralisation would have a negative impact as any person that is assigned to oversee it would be overloaded. I know that the institution is trying to save money but removing some roles, but we must not forget the purpose of an academic institution. Quality on its own requires a lot of work and research. So if there is one person that oversees not only quality but also other areas for knowledge sharing, this can result in a lot of work. Also, we should know who is responsible for what, so that when we have a query, we know who to go to. That person therefore should be visiting us and filtering down knowledge from the meetings held at higher levels.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    It depends on the management style of the people involved. Are they really involved? For instance, there are those managers who send an email, but do not going in and ask 'how far are you'? They are no longer getting involved but just managing from afar, I suppose that is the disadvantage of technology, it can create this divide.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    I personally do not hold on to my knowledge. It does not help me if I don't share, but from my experience here people have an issue with sharing. There is also no workload model. You just do everything, including all the admin. You are the secretary and the academic. There needs to be a workload model that can incorporate knowledge sharing and one that does not overload us so that we have time to share knowledge, otherwise we are overloaded with jobs we should not be doing. For example, with part-time lecturers, who checks their quality of work? You have to do that. What is a subject coordinator? No one knows what this job is. You just have to take responsibility for everything.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    I do not have any personal factors that would prohibit me from sharing.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    A person/ department must choose one technology at a time. If there are too many things to use, people lose interest. Using one tool gives us time to master it.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    With the workload model not being up to scratch we are all upset and not happy about doing certain tasks. Knowledge sharing should be built into the workload model.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    The people that I spoke about that should champion the knowledge sharing in the faculty – a representative for each pillar must motivate the staff. Matters arising in meetings perpetually stand over and do not get sorted. If these matters are addressed, staff will be more motivated. The institution should go to other institutions and see how they work.

Respondent 15
Faculty: Applied sciences
Department: Organic chemistry
Level: Senior lecturer
Location: Respondent's office
Date: 24 June 2014
Time: 14:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   All levels are related to each other, even though they deal with different things slightly. For example, we had a marks meeting and the HOD got information from faculty but hadn't really shared it properly with us so we were all a bit in the dark as to what was going on so there is a big link between the different levels. This information is not always filtered down, so you don't always understand the reasons for the decisions made.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   It should be the HOD.

3. What are the problems that knowledge sharing could address in your area of work?

   The staff changeover: When I started here, the person had already left, so there was no handover of information. You just get thrown in the deep end with a pile of papers dumped on your desk. A lot of basic info re how things run in a department is also not made available upfront, and you end up wasting time and getting frustrated asking questions about trivial things such as basic procedures regarding where to get a card to print. The basic procedures of how things run in the department.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   It would be good for team morale and team-building. It would make it easier for the department to run efficiently if there is more sharing of knowledge, otherwise everyone can do their own thing and you end up repeating stuff. It will get us to work as a team to solve problems and get people to have their say and try and work out different solutions.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   Our department does not work as a team, everyone is on their own. I think that other staff should do the same, as it can't be a one-way thing. The only way would be to have buy-in from all staff to make things easier for everybody. For example, there is very little admin assistance, you have to do everything yourself. You basically have to be lecturer, admin person, photocopier person, everything. If we work together a little bit more, it will make everyone's lives easier.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   No so much that, it depends on the staff you have, or the willingness of everyone to participate.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   We have subject files which is a big help – that's one way. And we basically need someone that has the time to constantly follow up (on what's happening in the department). We are overloaded.

8. Do you think that academic staff should share knowledge?

   Yes, definitely.

9. Do you think that knowledge sharing processes should exist in the organisation?

   You would have to have quarterly meetings to discuss what you have tried, technologies that have tried, feedback on what has worked and what was difficult, so that I think would help.

10. Do you think that technology should be used to share knowledge?

    Well it makes it easier. For instance, Blackboard works very well. If technology is set up and available, then it's easier. It should be easy to use. If you have to go and hunt for technology on which to share, that would make it difficult.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    When a new staff member arrives, there should be an instruction manual that will cover procedures such as exam processes, printing notes, how to apply for funding, etc. All of those little things, they just assume you should just know.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Not wasting time, if you are going to try something that someone else has already done and has either succeeded or failed at then you can try a different approach. You would save time and you also get new ideas.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    It needs to be more at the departmental level, as departments do things in different ways. It needs to be more on the local level. The faculty here just seems to do their own thing anyway, so it won't work.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    Definitely a yes, for example, Chemistry and Chemical engineering have different ways of running things. The one will do something without consulting the other.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

Yes, some people work hard and others are lazy, so I'm not going to give someone my notes that I spent hours preparing, it's got to be a collaborative effort. That is dependent on the type of person you are.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    My only thing is I'm not willing to do the job of other lazy people as well.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The facilities here are shocking, we are way behind what schools have, and we could do so much more with better technology.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    It would be a difficult thing to formalise. The subject file preparation is easy for example, so the process for knowledge sharing should be user-friendly, not time-consuming, there should be good guidelines and it should be simple to do.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    You need a strong HOD, good morale between staff. The HOD must set a precedent for what is expected, and what is okay, and what is not okay. They should have good leadership otherwise individual people only end up doing the right thing.

Respondent 16
Faculty: Education
Department: General education and training
Level: Senior Lecturer
Location: Respondent's office
Date: 25 June 2014
Time: 10:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   All levels to ensure broad organisational performance and optimal running and management in all departments of the institution. Sharing must take place between academics and between academics and management.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   It should be well-structured so that academic, admin and management play a dynamic role. Each department plays a role in growth and functioning.

3. What are the problems that knowledge sharing could address in your area of work?

   To prevent miscommunication, ignorance, avoid operating in isolation, when that happens, all kinds of maladministration can take place. So the aim should be counteracting duplication and wastage, and ensure efficiency.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   It is important to staff, then it should be policy. There should be built-in structures and mechanisms to help optimise knowledge sharing, for example seminars, monitoring committees, report-back sessions, etc.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   It's in my nature to empower people, to enlighten, to prevent ignorance, to build trust relationships, educational relationships and to help to bring about equity. I'm also aware that some people are not always keen to share their knowledge, but others' lack of willingness to share does not impede on my willingness to share.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   Maybe, but this is linked to one's personality. Some of us are natural sharers and others are by nature sceptical and hesitant to share especially if they think that someone else might benefit unduly from their knowledge. But no, I don't think it will impact negatively on whether I share. It is probably linked to your sense of self-worth.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   Through policy, but to get to a policy, there must be consultation and there must be a process until you finalise your policy. Very often people need to be re-orientated and trained to undergo a paradigm shift. There should be deliberate training, especially for new people coming in.

8. Do you think that academic staff should share knowledge?

   Yes. If you are not willing, you should not be an academic, especially if it contributes to the smooth running of the department they work in because it contributes to the social and emotional well-being and operational effectiveness which is directly related to the sharing and utilisation of knowledge.

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes, if not, we may just as well close down. It is should be the life and soul of the institution.

10. Do you think that technology should be used to share knowledge?

    Yes, but we shouldn't struggle as much as we do here. There's always something going wrong with the technology. But we should not use technology exclusively, as first of all there is no way of reading one's body language, due to the lack of personal interaction and sometimes it's unreliable.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    The people in charge should create a space, time and opportunity to share. There should be constant, regular interaction between all staff (including management), and it is important to have meetings with admin staff too on issues impacting academics (like assessments).

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    The development of social, emotional and cognitive skills and to get satisfaction out of helping and informing someone. Mutual enrichment, opportunity to network and interact on a knowledge level.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a <u>negative</u> or <u>positive</u> impact on the support and preservation of knowledge sharing? Elaborate.

    Management could take charge in some respects, and to use appropriate avenues to ensure constant sharing of knowledge (knowledge management), which will impact on the creating and utilisation of knowledge.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    It has got everything to do with power, as we are operating in a dynamic environment and you're working with people, so there are push and pull factors (politics), which can either create a negative or positive environment.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    I share every day, as I am on committees, in the class, etc. Some people say we teach too much, so there is little time for research. We must have an opportunity for specialisation in areas that we are interested in, for example, more time to do research.

But the current staff complement and kinds of students that we have make that difficult. For example, I can only attend about two conferences a year or write two papers a year. That is a form of knowledge sharing, but there is not always enough time to do that.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Maybe I procrastinate too much. I don't always grab all opportunities. You also need to take up a strategic position to serve on committees and interact with colleagues (example for promotional purposes).

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The degree of accessibility to all role players. Also, staff should have the skills and knowledge to use it optimally.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The overload of knowledge could be a problem, as I can't keep up with emails, reading etc. The main issue is time constraints.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    The main thing is team work and networking, regular reflection on what goes wrong and what goes right and how can things be done differently.

Respondent 17
Faculty: Education
Department: General education and training
Level: Lecturer
Location: Respondent's office
Date: 25 June 2014
Time: 12:30

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   Currently we only share on the subject level and between our campuses on subject/ discipline-specific knowledge. But more generic knowledge must be shared on higher levels (not teaching content).

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   It should come from the individual academics, and maybe there should be avenues to filter this knowledge, first horizontally, and then vertically. HODs should be a guide for staff development (for example those staff with PHDs that do nothing with them – what is their vision for future?).

3. What are the problems that knowledge sharing could address in your area of work?

   We have a lot of lectures and not enough time to do extra reading. Workshops could help to share knowledge (they are shorter and to the point). You can't possibly have all the knowledge you need, so you can learn from other people.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   That is a grey area. Management say 'this is our vision' but we are just there to make it work, without knowing how to do it. There is no follow through on the plans by management. We also get involved in a lot of other admin and just get by in order not to get blamed.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   I'm very admin-focused and rarely find the time, although I would like to share about what the way things are done in the classroom.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   No, people become stagnated if they don't share. They think they are in their own nice or protected area. They have this 'don't tell me what to do' attitude. There should be accountability. I'm sure I would share whether or not it was compulsory.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   Here our timetables are filled to the brim. There are no slots for staff development. It should be there, they should make provision for sharing.

8. Do you think that academic staff should share knowledge?

Yes, if we create a platform for sharing, people will share.

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes, like seminars.

10. Do you think that technology should be used to share knowledge?

    I think that's the in-thing. But it can result in a lack of interpersonal relationships. For instance, staff don't phone or visit, they just email when they need something. Technology is good, but there must be a good balance. At the moment email, for example, is the vehicle for all communication which is not good.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    Organise a set of themes or topics to discuss on certain occasions such as via workshops or seminars and nurture a culture of sharing. It must be organised, not happen in an ad hoc manner.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Growth and development.

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    It depends on the vision of the institution. The whole system must be environmentally friendly (suit everyone).

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    That is the number one issue. You do one thing, and someone will question what you are doing.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    We are overburdened with lectures although they say you need to be 'wise' about how to teach the curriculum, but it is already worked out, how can you reduce it further? They need to bring in more manpower.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    I'm open to sharing, so I do not have any personal factors that inhibit sharing or any hidden agendas.

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

The drawback is that a lot of people are still technology illiterate. I can count on my fingers the number of people using e-learning, for instance. They think that the nature of our jobs is face-to-face instruction but don't realise that e-learning can be used to complement teaching, so they don't know how to use it optimally.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Being clued up with the mechanisms. Staff should know how to use any vehicle, or mechanisms used for knowledge sharing. Time is also an issue. They should make time available for people to attend sessions.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

    There should be accountability for one's actions so a good idea is to link knowledge sharing activity and participation in performance reviews.

Respondent 18
Faculty: Business
Department: Office management and technology
Level: Senior lecturer
Location: Respondent's office
Date: 27 June 2014
Time: 11:00

1. Should knowledge sharing be undertaken at institutional, faculty, departmental or subject level?

   All levels. Any knowledge can be shared, you cannot have a subject that stands alone, as there is interlinking between subjects as well.

2. Who should be the driver/s of knowledge sharing activities within the area you have stipulated above?

   Knowledge should be shared by everyone. There should not be one person that manages knowledge activities, but there should merely be a space (platform) provided.

3. What are the problems that knowledge sharing could address in your area of work?

   The areas that pertain to my area of work where knowledge sharing is important is training related to my discipline and teaching, even though I am the only one teaching in my subject, I still need to share knowledge.

4. What do you consider as effective strategies for gaining academic staff commitment to knowledge sharing?

   Give staff the opportunity to share by creating a space for sharing, such as organising discussion sessions.

5. What would you consider as influencing/ motivating factors on your decision to share knowledge?

   The availability of experts and expertise, especially for my discipline. It would not be effective if there is no one sharing their expertise.

6. Would your level of willingness to share knowledge decrease if it was not made compulsory?

   Not necessarily. It would depend on what I need to share and how important it is to me.

7. How can knowledge sharing as a process be formalised/ institutionalised?

   There must be a culture of sharing. If not, nothing will be done. The culture must be institutionalised for knowledge to be shared at all levels.

8. Do you think that academic staff should share knowledge?

   Yes

9. Do you think that knowledge sharing processes should exist in the organisation?

   Yes, there must be a platform for sharing.

10. Do you think that technology should be used to share knowledge?

At management level yes, but academic level it might be time-consuming.

11. What enablers should be in place to ensure successful implementation of knowledge sharing processes subsequent to academic staff accepting the responsibility of sharing knowledge?

    If there is a culture of sharing, this will enable people to share freely and will support openness and discussion.

12. What personal benefits do you perceive you would/ should gain out of sharing your knowledge?

    Learning something new or being reminded of something that you know (have forgotten).

13. Do you think that centralising knowledge sharing at faculty or institutional level would have a negative or positive impact on the support and preservation of knowledge sharing? Elaborate.

    It depends on what knowledge. If it is academic knowledge (discipline-specific knowledge), the only those within the discipline can manage that knowledge.

14. Do you think that power issues could potentially threaten or influence the support and preservation of knowledge sharing? (Yes/ no). Elaborate what would constitute a power issue.

    No.

15. Which work environment-related factors would impact negatively on your ability/opportunity to share knowledge?

    If other people are not sharing, it will impact on my willingness to share knowledge. Sharing should not be one-sided.

16. Which personal factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    I do not have personal factors that would inhibit me from sharing, as long as my colleagues are also sharing. If they don't share, what is the point?

17. Which technology factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    Experience in using technology and the availability of technology.

18. Which process factors would impede on your ability to share knowledge or lead to your abandonment of knowledge sharing?

    The availability of those people that must share their knowledge and those people knowing what must be shared. This is important for the process to work. Without people, the processes would be non-existent.

19. What do you think could sustain knowledge sharing within your subject, department or faculty?

Weekly or monthly meetings will create a culture of sharing and will increase that sense of sharing between staff to create a knowledge sharing platform and to sustain knowledge sharing.