Knowledge-Sharing Management in the Context of Higher Education Institutions

A thesis submitted for the degree of Doctor of Philosophy

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ABSTRACT

Competitive advantage does not depend solely on the creation and storage of existing and new knowledge. Rather, it requires sustained exploitation and production. The challenge becomes driven towards maintaining some mechanisms to help in producing new, and sharing existing knowledge. Harnessing the power of managing and sharing knowledge enabled companies like Apple and IBM to gain competitive advantage over their competitors. While such challenges have been closely examined in the extant literature, the context of knowledge management and sharing in higher education institutions (HEI) has only been lightly considered. However, considering the highly unique features of HEIs context in terms of autonomy, climate, distinct leadership and role of academics as knowledge workers, it can be argued that examining knowledge-sharing in the context of higher education is greatly needed. The literature has shown fragmented nature of examining academics' KS determinants in contemporary research. Thus, the need to comprehensively examine those influencers is essential. This thesis seeks to address the research gaps and contribute to the literature by asking *What antecedents influence the process of knowledge-sharing (KS) between academics in HEIs, and how can the process of KS in HEIs be improved?* Through the use of a quantitative research methodology, the research has developed eleven hypotheses to *investigate the above-mentioned question.* The findings in this study revealed to a very great extent that academics themselves can contribute towards influencing knowledge production and management, and determine the levels to which the universities will be able to share knowledge internally. The research reveals that organizational factors (affiliation, innovativeness, fairness represented by organizational climate and HEI leadership) were stronger predictors of academics' knowledge-sharing than individual (perceived loss of knowledge power, knowledge self-efficacy, perceived reciprocal benefits and trust) or technological ones.

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DECLERATION

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1.0 CHAPTER ONE – INTRODUCTION

1.1 Introduction

Knowledge has been identified as a critical organisational resource for the survival of organisations in today's vibrant and highly competitive market (Wang, Wang, & Liang, 2014). Literature has linked knowledge with continuous innovation and organisational success (Von Krogh, et al., 2012; Urbancova, 2013). Effective management of organisational knowledge creates a more elegantly structured framework from which to direct the organization in its most positive direction for sustainable growth. Such a framework leads to improvement of work outcomes, adoption of new techniques, the creation of new competencies, development of problem solving skills and improvement of overall productivity (Hislop, 2013; Wang, Sharma, & Cao, 2016). Even though educational institutions can be publicly owned or privately owned (Douglas, 2006), and specialize in research as well as synthesis and transmission of knowledge (Altbach, 2015), they are businesses in the traditional sense. Even if the university receives funding strictly from governmental sources, its leaders are tasked with handling the money in a responsive and responsible manner to cover the needs of the stakeholders. Increasingly, universities are expected to compete on the global market of assisting students in developing a skill set (Altbach, 2015).

The ability to transmit knowledge is a very hot commodity and universities that excel in this skill gain students, while universities that cannot accomplish this goal are prone to failure. As Altbach (2015) pointed out, over two million students a year now leave their home nation to travel to other nations to acquire their desired education. Thus, even if the university does not consider itself to be a multi-national university, all universities are by reason of their function is universal (Altbach, 2015). This position has been heightened by the internet, which led to far increased communication between residents of various nations, and in turn to the "marketing of knowledge products," (Altbach, 2015, p. 2).

At the same time, society must be clear that “education at all levels is not simply a commodity to be bought and sold in the marketplace” (Altbach, 2015, p. 2). Altbach points out that understanding culture, people, and values of those peoples is not a commodity. It must be transmitted to the learners; it cannot be bought. Similarly, understanding of national ideals and social ideas must be learned. Research must occur, but to a large degree, it cannot be commercialized (Altbach, 2015). This juxtaposition of knowledge and commercialization of its transmission has resulted in a great deal of change in the last generation.

The last two decades have witnessed growth of interest in knowledge management (KM) in research and practice (Asrar-ul-Haq & Anwar, 2016; Hislop, 2010; Iqbal & Mahmood, 2012; Ragab & Arisha, 2013; Serenko & Bontis, 2013). Organisations have increasingly adopted KM programs to leverage in-house available and outsource acquirable knowledge resources (Viju, 2011). They have also invested in knowledge management systems (KMS) (Asrar-ul-Haq & Anwar, 2016; Joia & Lemos, 2010; Leidner, Alavi, & Kayworth, 2010; Von Krogh, Nonaka & Rechsteiner, 2012). KM has developed into an essential element of a firm’s strategies (Convery, 2011; López-Nicolás & Meroño-Cerdán, 2011).

1.2 Background: From Managing Towards Sharing Knowledge

Knowledge can exist in different levels: individual, group, and organizational levels (Leidner, Alavi, & Kayworth, 2010). The idea of knowledge in departmental and divisional levels was added by Von Krogh (2011). Knowledge also comes in different types. Early literature discussed two key forms of knowledge: explicit, or clearly stated, and tacit, or knowledge that was understood even though it was not clearly stated. Explicit knowledge is found in written forms and accounts for a majority of organisational knowledge activities. Explicit knowledge is easy to capture and codify (Wang et al., 2014). In contrast, tacit knowledge is deeply rooted in individuals’ experiences. Most knowledge held by individuals is tacit. Because it is not clearly expressed, it is difficult to transfer from person to person (Von Krogh et al, 2012).

Competitive advantage does not depend solely on the creation and storage of knowledge. Rather, it requires sustained exploitation and production of new knowledge to maintain a competitive edge (Leidner et al., 2010; Wang et al., 2014).

The process of knowledge utilisation and production of new knowledge is typically facilitated by knowledge-sharing (KS) (Evans et al., 2013; Ipe, 2003; Liao, Fei, & Chen, 2007; Wang et al., 2014). Hislop (2013) indicated that knowledge management relies on knowledge-sharing to be successful. Therefore, it can be argued that KS is an integral component of KM that helps achieve organisational objectives through the process of exchange and utilization of various forms of knowledge and information. Evans, (2013) argued that KS can facilitate the movement of knowledge across the organization. KS can be of economic value to the organization because of its function in KM. In an organizational context, KS refers to the process of exchanging knowledge among individuals, groups, teams and departments (Ipe, 2003). A growing body of literature has identified the importance of KS to KM, and ultimately to organisational success (Wang & Noe, 2010), regardless of the form of the organisation. For example, scholars like Von Krogh et al, (2012) and Convery, (2011), frequently linked KS to innovation. Recent research has suggested that KS enhances innovation capability (Liao et al., 2007; Wang et al., 2016), reduces production costs, and increases sales and revenues as aspects of organizational performance (Collins & Smith, 2006). Babcok (2004) reported that Fortune 500 companies have lost $31.5 billion because of failing to share knowledge. Lack of KS can be a barrier to KM and prevent institutional learning (Riege, 2005).

1.2.1 Managing Knowledge-Sharing in Organisations

The power of knowledge is enhanced by sharing this knowledge and making it available throughout an organization (Jones & Sallis, 2013). Nearly two decades ago, organizations began to realize that KS does not always take place in practice despite its critical role (Hansen et al., 1999). Several organisational efforts were applied to promote knowledge-sharing among employees and to manage the process of knowledge-sharing effectively and efficiently. In the late 90s, the codification approach to knowledge-sharing evolved. This approach relies on using information technology to capture, store and disseminate knowledge (Mughal, 2010). Knowledge that is specialty knowledge and has been learned over a long period of time is particularly used in codified mechanisms to share group knowledge over a wide segment of individuals or employees (Mughal, 2010). The approach was

popular and was utilized by many organizations (Hansen et al., 1999). De Long and Fahey (2000) suggested, however, that the power of technology would not deliver KM and enhance KS activities if it is not supported by organisational and individual values and beliefs.

Previous studies attempted to identify antecedents, motives, and factors that lead employees to share their knowledge (Cabrera & Cabrera, 2005; Ipe, 2003; Olowodunoye, 2015; Wang et al., 2014*)*. Research suggests that employees normally consider their knowledge as source of power (Chennamaneni et al., 2012). Employees fear that they will lose their power by sharing knowledge with others. If this is correct, it would imply that there is a negative relationship with KS.

Ipe (2003) identified several factors believed to influence KS among individuals: nature of knowledge, motivation to share, opportunities to share, and the culture of the work environment. The nature of knowledge typically refers to the tastiness and explicitness of knowledge (Chen et al., 2010; Ipe, 2003). Ipe (2003) suggested that the degree of knowledge tastiness would influence KS behaviours. Ipe explained that tacit knowledge is the 'know-how' knowledge. It includes subjective experience-based knowledge. Explicit knowledge on the other hand, can be easily codified, stored and transferred via some form of technology medium (Wang et al., 2014). Explicit knowledge is referred to as 'know-what' knowledge. Explicit knowledge is task-related and objective in nature. Explicit knowledge has an advantage over tacit knowledge in terms of sharing, because there is no interpretation involved. The knowledge is explicitly stated and thus easily transmitted.

Knowledge-sharing motivation was found to have a significant effect on KS participation by employees (Amayah, 2013; Chennamaneni et al., 2012; Mansor et al., 2015; Saad & Haron, 2013). The literature listed two types of motivations believed to affect KS. Internal motivation has an intrinsic value (e.g. enjoyment in helping others); external motivation has extrinsic value (e.g. monetary incentives or praise) (Lin, 2007). Previous studies suggest that internal motivation is more effective in the enhancement of KS than is external motivation. Internal motivations are associated with employees' willingness to create self-satisfying value, which results in voluntary sharing of knowledge (Amin et al., 2011). Opportunities to share knowledge have also been emphasised as an antecedent to KS (Ipe, 2003). Ipe

categorised sharing opportunities as formal and informal. Formal opportunities include the use of technology-based systems to share knowledge, and implementation of training programs for the sharing and generation of knowledge. Informal opportunities include social relationships as ways to share knowledge. Studies indicated that many of these elements might be influenced by culture, climate, or sub-cultures in some form.

People share knowledge through face-to-face and social communication (Cabrera & Cabrera, 2005; Riege, 2005). Understanding the ways that people communicate is thus important. Communication methods vary from culture to culture. As a result, managing KS activities requires an understanding of cultural nuances. Hence, culture plays a critical role in managing KS activities (Al-Adaileh & Al-Atawi, 2011; Kathiravelu et al., 2014; Massa'deh, 2016). Characteristics of the personal context of culture, especially those shown in the leadership role, were explored in conjunction with KS. Leaders can potentially influence KS behaviour through leading by example (Riege, 2005). Leadership style also has a significant impact on knowledge-sharing culture among MBA students (Connelly & Kelloway, 2003). Recent evidence suggests significant interest in personalizing the approach to knowledge management in the past decade. Providing individualized training to employees can help them understand KS processes, activities, and behaviours.

A growing interest in knowledge management and sharing has been cited in the literature. However, widespread discussions during the last decade have focused on the commercial and industrial environments (Wang & Noe, 2010). Research into knowledge management and sharing in the higher education sector has been limited (Chugh, 2015; Fullwood et al., 2013; Jolaee et al., 2014; Kim & Ju, 2008; Tan & Ramayah, 2014).

1.2.2 Higher Education Institutions (HEIs)

The higher education sector is unique; it is very different from the commercial and public sectors in many ways. The key knowledge functions for universities is through the production, documentation, and the dissemination of knowledge (Fullwood et al., 2013; Jolaee et al., 2014; Kim & Ju, 2008; Li et al., 2013; Othman & Skaik, 2014; Rowley, 2000; Sharimllah et al., 2007). At the same time, universities must function

in some regards as businesses, in order to survive. In today's environment, universities are forced to compete with other universities at national and international levels in order to gain more students.

Academic freedom and autonomy have been particularly strong traditions in the academic sector, to the extent that this independence is a distinguished feature of the sector (Cronin, 2000). Other features that make universities differ from most other organisations include the overall structure, the types of leadership, and the overall organizational culture (Fullwood et al., 2014). As a result, despite shared qualities, knowledge management and sharing environment in higher education institutions (HEIs) are intrinsically different from organisations in the commercial, industrial and public sectors, in a number of important ways.

HEIs can be classified as knowledge intensive organisations (Chugh, 2015; Omerzel et al., 2011). Alvesson (2000) described knowledge intensive organisations as firms where most work is considered of an intellectual nature and where well-qualified employees form most the staff. Staff of HEIs staff can undoubtedly be considered knowledge workers. Hislop (2013) has described the knowledge worker as a person who is involved in largely intellectual, creative, and non-routine work.

There two types of employees in HEIs: academic staff, and supporting staff who perform non-academic functions. In this context, academics are knowledge workers who create and utilize different types of knowledge to complete their work. They possess extensive tacit and explicit knowledge (Macfarlane, 2012), and continuously participate in knowledge management and sharing activities in their daily routines. In the context of HEIs, research contributions and outputs, using training manuals, following written work procedures, and passing information to students can be seen as explicit knowledge activities. Tacit knowledge, on the other hand, is contextual, personal, and exists in the form of know-how and skills. Working with other academics to learn best practices of sharing teaching materials, developing syllabus, and delivering courses is another form of tacit knowledge-sharing.

1.2.3 Knowledge Management and Sharing in HEIs

Ramachandran et al. (2013) described KM in HEIs as a systematic process to develop and implement knowledge-related activities with the support of organisational enabling factors. These activities would include knowledge-creation, acquisition, sharing, and application (Young & Myers, 2012). Recent studies underlined HEIs as the ideal environment to adopt KM programs since KS and communication are already normal practices in universities (Naser et al., 2016).

HEIs have several distinct organizational features. They have high levels of autonomy, a distinctive structure, unique leadership, and a tendency towards strong disciplinary sub-cultures (Kim & Ju, 2008; Altbach, 2015). Academics' individual characteristics form a supporting culture for the HEI (Fullwood et al., 2013). It can be argued that these distinctive features influence the way academics share knowledge with internal stakeholders.

The typical structure of a university involves the existence of many physically segregated colleges, schools, department, and programs. The organization can create physical and psychological barriers to knowledge management and sharing activities (Bureš, 2003; Tippins, 2003). Collinson & Cook (2003) cautioned that this type of structure would spur academics to work in isolation from each other and promote individualism rather than orientation to the needs of the whole.

According to Wang and Noe (2010), management support of KS activities would promote sharing environment among employees through leading by example. However, the role of leaders in HEIs is distinctive and can be different from the role of leaders in other organisations. Yielder and Codling (2004) reported that universities have both academic and managerial leadership. They cautioned that tension might rise between the two types of leaders in HEIs; the goals of the two types of leaders sometimes clash. The role of organisational climate and culture in supporting organisational KS is widely discussed in the literature (Fullwood et al., 2013; Hislop, 2013).

Despite the role of KM and KS in HEIs, Chong et al. (2011) claimed that there were few attempts to implement KM programs in universities. Some authors have argued that the key objective of these attempts was to manage an easily coded or explicit form of knowledge and provide communication means between specific staff on one side and students and faculties on the other side (McManus & Loughridge, 2002; Ratcliffe et al., 2000). Those attempts did not address the concept that there might be more types of knowledge to share. Tacit knowledge for example is a key aspect of KM. If the knowledge residing inside members' heads has not been shared across the institution, advantage will not be achieved. Thus, this would be a critical fail point in today's competitive market. Each of these types of information may be shared in a variety of ways that can range from sharing among colleagues in a formal setting to sharing among a wide variety of individuals in a social setting (Talja, 2015)

1.3 Research Gap

For the past two decades, the value of knowledge management has been widely established in commercial and public sectors. Research also shows that KM depends on workers' motivations and willingness to share knowledge for KM to succeed (Hislop, 2013). HEIs are knowledge organisations with tacit and explicit knowledge inserted in people and processes. Many studies (Chennamaneni et al., 2012; Mansor et al., 2015; Wang et al., 2014) have identified obstacles to sharing knowledge. However, there has been little focus on sharing knowledge in HEIs. Naser et al. (2016) have pointed out that managing knowledge in educational institutions is the main aim of the educational institutions themselves. Thus, it is necessary to understand knowledge-sharing in these institutions. In HEIs, academics seek to share knowledge in an effort to link individuals from all over the institution, ranging from the uppermost management levels to the lowest employees, as well as every level of student. Knowledge in these organizations is shared through human activities, but also through the use of technical teaching processes (Naser et al., 2016). Social intercourse would not be enough; actual teaching and knowledge transfer must occur. To ensure this happens, some form of knowledge management is required. Given that knowledge management and knowledge-sharing should be a university organization's top priority, measuring knowledge-sharing and management needs to be explored.

As pointed out earlier in this thesis, in other occupations, knowledge management and sharing is important. In the context of the HEI, it is critical. As Naser et al. (2016) revealed, it is not enough to increase the process of knowledge-sharing or knowledge management. Instead, gaps in knowledge must be identified. Once identified, steps must be taken to fill the gaps, and in so doing to improve the performance of the staff on a consistent basis, while increasing educational efficiency (Naser et al., 2016). In this way, Naser et al. (2016) suggest, it would become possible to improve the management, sharing, and development of knowledge in the context of the HEIs. There are a number of studies that have investigated KS behaviour among academics (e.g. Cheng et al., 2009: Dyson, 2004; Kim & Ju, 2008; Othman & Skaik, 2014). However, considering the limitations of these studies in which they will be discussed in detail in the next chapter, it is evident that there is a need for further analysis of KS in HEIs. The current research overcomes these limitations by proposing and examining a comprehensive yet parsimonious model that identifies antecedents, which might affect KS behaviour among academics.

Naser et al. (2016) argued that the majority of the studies relating to knowledge management in HEI have concentrated on implementing knowledge management, rather than improving the quality or performance of knowledge-sharing. As of 2016, there was no standard model of knowledge-sharing and management; there was no standard conceptual model that academics could refer to for guidance or suggestions for improving KS performance. Without understanding knowledge management, Naser et al. (2016) argued, it would be impossible to reap the greatest possible benefit of the process.

Academics are knowledge creators and disseminators. KS is *not* less important in academia. However, there has been limited research relating to KS in academic institutions. One of the possible explanations for this seeming lack, semantics, has already been discussed. Some research into HEIs has been cited in collective high context cultures such as Malaysian and Korean universities. However, research concerning knowledge-sharing in HEIs has been disproportionately low in comparison to existing commercial/private and public sectors (Fullwood et al., 2013; Kim and Ju, 2008; Naser et al., 2016; Tan, 2015).

The last decade witnessed a notable rise of sophisticated technological tools such as web 2.0, social media, and web-based collaboration platforms. Sites such as Research Gate provided visible direct assistance to managing and sharing knowledge (Alotaibi et al., 2017). However, some of these tools focused on the research outcome between scholars and did not address inter-organisation sharing activities. Given the unique autonomy, HEIs leadership, significant institutional climate, the rise of technological collaboration tools and hierarchical settings of HEIs can exacerbate the need to examine the challenges associated with managing knowledge-sharing in HEIs. Furthermore, given the role of academics as 'intellectual leaders', different types of knowledge are utilized to complete work in the HEI (Stylianou & Savva, 2016; Tan, 2015) than in a standard business operation. Participation in knowledge-sharing activities is arguably critical to KM success.

Naser et al. (2016) referred to the primary functions of the HEI as being "knowledge, production of knowledge, documentation, and publishing," (p. 55). A number of researchers have determined that knowledge management and sharing in institutions helps ensure a "dynamic learning environment" as well as helping to develop knowledge-sharing, improving the efficiency of methods of knowledge-sharing, and in so doing increasing the HEI's overall performance (Naser et al, 2016, p. 55). Knowledge management is a framework that can be utilized by educators to develop a set of practices that will allow them to gather information, develop or synthesize the information, and to share the information. When the framework is implemented, the result can be academic behaviours that improve the services that go to students and even the product that the university is able to deliver to the potential customers (Naser et al., 2016).

1.4 Aims and Objectives

Universities and educational organizations in the context of HEIs exist to provide services to students and the surrounding communities. These services are to educate students through the process of knowledge-sharing. These activities aim to improve the quality of life of citizens through teaching, conducting research, preparing the general society for better jobs, preparing organizations to develop higher level jobs, and improving the overall levels of human capital (Naser et al., 2016).

This study addresses the issues already identified in the introduction. It will contribute to the body of knowledge on literature relating to KS between academics in HEIs. However, in this study of HEIs, the focus is understanding what influence academics in HEIs have inside the organization in terms of knowledge-sharing, rather than between universities. Thus, some of the social methods of knowledge-sharing suggested by Vyas and Tivedi (2014) may be particularly useful.

The KM practices and sharing enablers have been well-grounded both theoretically and empirically. The need to assess knowledge-sharing in the HEI settings is paramount. Given the features of HEIs, the academic environment, HEIs distinctive leadership and the autonomy of academic settings, it is highly desirable to understand KS activities from the point of view of academics by using an integrated and comprehensive model of KS influencers. This study will specifically focus on the following question: *What antecedents influence the process of KS between academics in HEIs, and how can the process of KS in HEIs be improved?*

This study aims to contribute to the literature of knowledge-sharing and KM in general on higher education sector by exploring how KS activities are perceived by academics. The current study has the following objectives:

1.4.1 Objective 1 – Review of the Literature

The first objective is to perform a comprehensive review of the literature to examine the existing body of knowledge in reference to KM and inhibitors and enablers of knowledge-sharing specifically within higher education institutions. In particular, an investigation will be conducted into the various types of knowledge-sharing among HEI academics, as well as associated communications channels facilitating the process.

1.4.2 Objective 2 – Identify Antecedents of KS Behaviour

The second objective is to suggest a conceptual model and set of hypotheses that explain the perceptions of academics towards KS management with internal stakeholders. This is essential for this research to propose relationships between perception factors and knowledge-sharing activities.

1.4.3 Objective 3 – Proposed Model to Assess KS Behaviours

The third objective is to perform an empirical query utilizing a questionnaire and based on quantitative method to understand academics' KS perceptions in HEIs. This provides a theoretical basis to be used in investigating factors influencing knowledge-sharing.

1.4.4 Objective 4 – Examination of the Proposed Model

The fourth objective is to examine the experiential data generated from the questionnaire and validate the proposed integrated model and propositions.

1.4.5 Objective 5 – Implications and Recommendations

The final objective is to provide theoretical and pragmatic implications of the study findings, recommendations to enhance KS in the HEI sector, and suggest opportunities for future research.

1.5 Research Methodology

In order to answer the research questions and achieve the research objectives, empirical data was collected from selected universities. The study resulted in development of a conceptual model employing the Theory of Planned Behaviour (TPB), including eleven quantifiable hypotheses based on prior studies and well established theory. The researcher chose a positivist approach (Bryman & Bell, 2014) to perform the study. The core focus was to validate the proposed KS model with the goal to enhance understanding of the impact of individual, organizational and technological factors on academics' perception towards KS management. The research utilized deductive philosophy in a quantitative approach (Collis & Hussey, 2014). Each of the eleven hypotheses was tested to verify or reject their validity

A survey was chosen as the most suitable method of data acquisition. Surveys are economically effective and can be completed rapidly. It is convenient to use a study to gather responses from a large number of participants (Bryman & Bell, 2014). The present study utilized a web-based questionnaire. Convenience sampling was utilized to gather the study sample. An online survey instrument was utilized to

gather the data as it offered numerous services for designing the questionnaire. The convenience of the survey delivery and the access to a large geographically dispersed sample (Bryman & Bell, 2014) made the use of the online survey instrument an excellent choice for this study. The collected data was examined through Partial Least Square Method in SMART PLS (Version 3.0) software to validate the hypotheses and the performance of the proposed conceptual framework (Hair et al., 2010).

1.6 Outline

The study is organized in seven chapters and is segmented into four theoretical stages: (1) contextual theory, (2) principal theory, (3) data theory and (4) original theoretical contribution. The contextual theory defined in chapters 1 and 2 reviews the existing research domain and the research need. The principal theory, presented in chapter 3, defines a proposed conceptual framework. The data theory is presented in chapters 4 and 5, which involve selecting and justifying the research strategy and discussing the findings of the collected data. Finally, the original theoretical contribution is presented in chapters 6 and 7. These chapters synthesize the results of the original research with the literature. The findings and conclusions of the study are reached based on this synthesis, which contains the debate of the results with reflection on previous studies and highlight the conclusion. The four stages and their accompanying chapters are briefly summarized.

1.6.1 Contextual Theory

Chapter 1, the introductory chapter, provides an outline of the thesis, including its background, the research aims, objectives, research questions, and the organization of chapters in this study. The chapter concludes with a summary.

Chapter 2, the literature review, reviews the literature pertaining to main issues and concepts of knowledge, knowledge management, and knowledge-sharing. It highlights the boundaries of the literature utilized in this study. The first boundary discusses definition and importance of knowledge and its management. It describes critical issues related to KM and KM definitions from different viewpoints. The chapter continues by highlighting key issues related to knowledge-sharing, such as

social elements of KS, and sharing advantages. The model of knowledge conversion from tacit to explicit is introduced. This chapter also reviews key theories used by researchers to examine and identify antecedents of knowledge-sharing behaviour.

1.6.2 Principal Theory

The second boundary of this thesis is principal theory. The research introduces several key issues in reference to academics in HEIs, including the role of faculty members in HEIs and knowledge types shared by academics. It reviews studies focusing on knowledge-sharing among academics. It continues by exploring commonalities and differences of determinants and antecedents influencing academic's knowledge-sharing behaviour. Chapter 3 identifies the research problem of this study. The chapter concludes with a chapter summary.

Chapter 3, the conceptual framework and hypotheses chapter, briefly highlights the need for a conceptual framework in higher education to examine knowledge-sharing perceptions from an academic's point of view. It discusses theories that will underline this conceptual model and provide rationalization for the theoretical background. Based on the theory of planned behaviour, a conceptual model is proposed to assess perceptions of academics towards the management of KS. Chapter 3 develops the research hypotheses that is tested in subsequent chapters.

1.6.3 Data Theory

Chapter 4, the research methodology chapter, focuses on choosing the methodology for the study and the conduction of empirical field work. The chapter defines the sampling strategy, data collection, and data analysis process. It then presents a discussion on the validity and reliability of the current study and ends with a summary.

In Chapter 5, the findings discuss the findings of the surveys created to examine the conceptual framework. Using SPSS (Version 20), demographic information, descriptive statistics and reliability tests are calculated. The chapter includes the results. SMART PLS (Version 3.0) is used to present the findings for model

assessment measures and model suitability. Finally, this chapter verifies the proposed hypotheses and outlines the findings.

1.6.4 Original Theoretical Contribution

Chapter 6 contains the discussion and tests the projected conceptual framework with reflection on the findings of previous studies. It discusses the result of each proposition in the context of prior literature. Next, it validates the conceptual model based on the attained results.

Chapter 7, the conclusion, presents a summary of the study. It reviews the aims and objectives of the study and relates the degree of achievement of those objectives. It outlines the theoretical and pragmatic contributions of the study. It identifies the limitations and provides recommendations for future research.

1.7 Chapter Summary

This chapter has established the basis for the study, including the aims and objectives. It has provided an overview of the transformation from managing to sharing organisational knowledge during the past two decades. It has further shown the importance of KM and KS to achieve overall organisational objectives. It has also highlighted the distinctiveness of the higher education sector, Higher Education Institutions (HEIs). It has also revealed that academic freedom and autonomy are strong characteristics of HEIs in terms the institutional and academics' levels. It is evident from the discussion in this chapter that HEIs are facing several challenges (Altbach, 2015) to stay competitive. This study argues that comprehensively understanding KS practices perceptions of academics can support HEIs to overcome some of those challenges and enhance overall university's performance. This can be realized by identifying and addressing determinants that would influence academics' intention to share their knowledge across departments (Kim & Ju, 2008). This chapter has also provided the outline for the thesis. In chapter two, the literature review is presented.

2.0 CHAPTER TWO –LITERATURE REVIEW

2.1 Introduction

Knowledge has been identified as a vital element for the survival of organizations in today's dynamic and competitive era. During the last decades, research in Knowledge Management (KM) has provided empirical evidence that knowledge is the ultimate source of competitive advantage (Asrar-ul-Haq & Anwar, 2016; Hislop, 2013; Wang et al., 2016). Literature shows that knowledge is key antecedent for continuous innovation (Drucker, 1999, Von Krogh et al, 2012). This suggests that managing knowledge is as significant for the organization as the management of other assets.

While managing organizational knowledge effectively would yield positive outcomes, neglecting this process would make knowledge deteriorate and corrode easily. Organisations, which have implemented KM, have yielded several benefits. These events include the ability to make better decisions, to increase profit, and improve productivity (Nieves & Haller, 2014; Villar et al, 2014). In this context, KM includes practices such as knowledge creation, knowledge acquisition, knowledge storage, and the sharing and application of knowledge (Abdullah & Sulaiman, 2016).

Several studies indicated that KM could be effective once knowledge is shared among organizational members (Kukko, 2013, Riege, 2005; Wang & Noe, 2010). This suggests that KS is an essential practice that leads to better organisational productivity, performance, operational cost reductions, a better ability to compete, and higher levels of innovation. Many researchers have attempted to understand how knowledge is shared, including the factors, motives and antecedents that lead organisational members to share their knowledge (Akhavan & Hosseini, 2015; Qureshi & Evans, 2015; Riege, 2005).

The majority of the previous studies have been conducted in business and industrial organisations. Few studies have investigated KS in HEIs or universities (Abdullah & Sulaiman, 2016; Kim & Ju, 2008). HEIs are the center for knowledge creation and dissemination. They are considered to be knowledge intensive organisations. KS is essential for the success of KM implementation in HEIs.

The literature review is split into three segments. The first segment discusses current literature on the fundamentals of knowledge and KM. The second segment continues the discussion by focusing on KS and elements affecting KS. The third segment reviews KS literature in higher education. It continues by critically reviewing the existing research on KS among academics. After presentation of the literature, a research synthesis is developed. The literature review concludes with a chapter summary.

2.2 Fundamentals of Knowledge Management

The mid-1990s witnessed explosion in the interest in knowledge management among academics, policy-makers, consultants and business people. In the early twenty–first century, Scarborough and Swan (2001) suggested that there was a risk that KM was a passing fad. Contemporary analysis suggests a decline has not occurred (Hislop, 2010). Other authors argued that there is sufficient evidence that KM has matured into a recognized scholarly discipline and has become institutionalized (Ragab & Arisha, 2013; Serenko & Dumay, 2015). The next sections of the research define the nature of knowledge itself and the importance of knowledge. Categorization of tacit and explicit knowledge is discussed. Finally, the development of KM is considered.

2.2.1 Definitions of Knowledge

The definition of knowledge has been rigorously debated in the literature, where the term *information* has continued to be used synonymously with the term *knowledge*, especially in the technology driven theories. A commonly held view of knowledge found in Information Systems (IS) literature is that knowledge is placed on top of a hierarchy of data and information (Leidner, Alavi, & Kayworth, 2010). Occasionally, authors refer to knowledge as a combination of data and information (Toffler & Toffler, 1993). According to Convery, (2011) data is ‘‘*a set of discrete, objective facts about events and in an organizational context, data is most usefully described as structured records of transactions”*. Information is “... *a message, usually in the form of a document or an audible or visible communication”* (Convery, 2011). Knowledge is a mix of information and data.

While Leidner et al (2010) hierarchical approach of knowledge is widely acknowledged by researchers and practitioners, Tuomi (1999) disagreed with the perspective. Tuomi reversed the hierarchy placing data on top of information and knowledge. The argument is that knowledge is needed in order to get information before data can be collected. Bell (1974) added experience, action, and sharing to the features of knowledge. He defines knowledge as ‘‘…*a set of organized statements of facts or ideas, presenting a reasoned judgment or an experimental result, which is transmitted to others through some communication medium in some systematic form”* (p. 175). This complements Convery, (2011) and Von Krogh et al (2012) arguments that knowledge is experiences and values that are formed when knowledge is shared, used, and reused. To date, much of the existing research has adopted this definition of knowledge. Therefore, the author of this study will do so as well. This definition is inclusive of knowledge as content, including experience, values, and beliefs, as well as the purpose of knowledge and how it is applied.

2.2.2 Categorisation of Knowledge

Knowledge is either subjective or objective (Polanyi, 1966). Polanyi pointed out that people often know more what they can express. Thus, he suggested, knowledge is made up of explicit (objective) and tacit (subjective) knowledge. Following the work of Polanyi (1966), Von Krogh et al (2012) described explicit knowledge as formalized written knowledge, which could be easily communicated and shared through mediums such as manuals, textbooks, or scientific formulas. Other authors, including Brown & Duguid (1991) and Cook & Brown (1999), considered explicit knowledge less important to organizations. Explicit knowledge had a simple nature, as well as a lack of know-how and imbedded experience. The unique features of explicit knowledge are that it can be easily kept, moved, disseminated, and retrieved through widely available means. Early KM research largely focused on making explicit knowledge accessible through the use of databases in digitized format enabled by the use of IT systems (Beesley et al, 2008; Girard, 2006).

In contrast, Von Krogh et al (2012) defined tacit knowledge as being rooted in the actions and experiences that relate to an individual. As a result, tacit knowledge is complex to transfer. Other authors recognized tacit knowledge as know-how and experience based knowledge (Brown & Duguid, 1991). According to Botha et al.,

(2008), tacit knowledge is based in the human mind. Tacit knowledge can include a wide variety of experiences, including cultural beliefs, an individual's values, their expertise, and the capabilities they have developed. KMS and IT applications find it difficult to codify this type of knowledge (Convery, 2011). Sharing explicit knowledge through books and manuals is easier.

Tacit knowledge cannot be shared or taught, simply due to the personal nature of the knowledge (Mahroeian, 2012). Although the nature of both explicit and tacit knowledge is still intensely debated, Von Krogh et al (2012) suggested that the two types of knowledge are complementary to each other, and both are crucial to knowledge creation. Despite the common discourse of tacit-explicit taxonomies in the literature, other classifications of knowledge have also been presented. For example, knowledge was segmented into three categories: know-what, know-how and know-why, by Zack (1999).

An earlier view by Nonaka (Von Krogh et al 2012) considered knowledge as individual or collective. Individual knowledge exists in the people's heads, but other owners of knowledge could also be groups and organizations. As a result, communities of practice surfaced as a concept. The idea of communities of practice was developed by Lave and Wegner (1991) to reflect that learning and sharing is largely a social function. According to Stewart (2001) (cited in Botha et al., 2008), a community of practice is a group of professionals who are exposed to similar problems, who pursue solutions, and embody a storehouse of knowledge relating to one particular profession. From an organizational perspective, Hatch (2010) defined organizational knowledge as resulting when the knowledge of one or more subunits or groups is combined in a synthesis of new knowledge. The tacit and explicit knowledge that results is defined as organizational knowledge.

One of the most influential and widely accepted knowledge creation and categorization models in the knowledge management area is the SECI model by Nonaka (Von Krogh et al 2012). Nonaka (Von Krogh et al 2012) suggests that knowledge is frequently generated following conversion and sharing, illustrated in the SECI model in figure 1. The framework suggests that tacit to tacit knowledge conversion is characterized as socialization, where experiences and actions are shared through social and informal activities. Externalization is the process of

transforming know-how knowledge imbedded in people's head to a coded form (explicit) using mediums like IT. When combining multiple sources of coded knowledge to form systematic knowledge, the transformation process is called Combination. The last knowledge transformation stage is called Internalization; it occurs when an individual applies the coded data (explicit) into the work activity to create know-how (tacit).

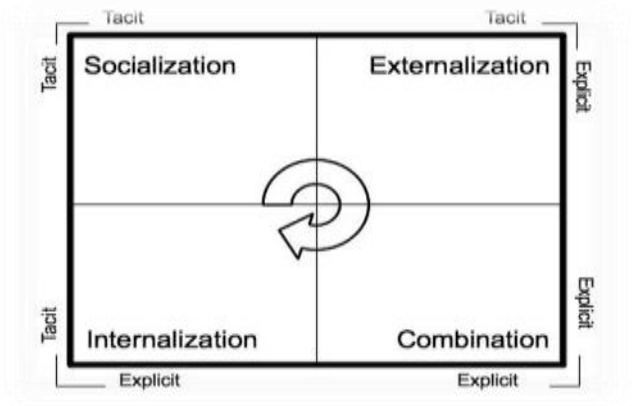

Figure 1. SECI model. Modified from and Von Krogh, Nonaka & Rechsteiner, (2012)

Although Nonaka's SECI model was widely endorsed and accepted by academics and practitioners, it has been the subject of intense critique. For example, Gourlay (2006) considered that some of Nonaka's SECI modes for knowledge creation lack supportive evidence and testing. In his extensive critique of the SECI model, the author added further critiques concerning the subjective definition of knowledge in Nonaka's framework where tacit knowledge can be converted to an explicit one. Gourlay (2006) argued that the SECI model is based on Polanyi's knowledge taxonomy and conversion theory but argues that Polanyi's position on this is neither clearly documented nor researched.

Another critique of Nonaka's model was debated by Glisby and Holden (2003), who argued that Nonaka's conceptual findings were based on Japanese management culture of companies and thus could not be generalizable to different environments. Hence, the usability of his framework is limited to Japanese business practices. Another critique came from Klein (2008), who argued that while tacit to implicit knowledge conversion in the spiral model is theoretically valuable; it lacks the need for individual interaction during the learning process and the environment needed for that conversion to take place.

Von Krogh, Nonaka, and Rechsteiner, (2012) acknowledged the issue of tacit and explicit knowledge conversion and conceptual issues. No response on the criticism of usability of his model outside of Japanese business culture is documented in the literature. Irrespective of knowledge forms, organizations need to manage their intellectual assets to achieve goals and objectives. Consequently, effective knowledge management programs would assist organizations in gaining an edge and increasing the ability to compete in the global knowledge-based economy.

2.2.3 Knowledge Management

In view of the importance of knowledge, organisations are giving priority to knowledge acquisition and ways to organise, share, and apply knowledge effectively across the institution. Unless knowledge is efficiently managed, it may not transfer into innovation or into intellectual capital or assets in which organisations can use to become more competitive and productive (Ramachandran et al, 2013). Many researchers concur that KM is not merely just storage and dissemination of information, but a process that requires several coordinated practices (Abdullah & Sulaiman, 2016; Asrar-ul-Haq & Anwar, 2016). Thus, KM is widely recognized as a practice involving knowledge creation, codification and sharing.

An overview of existing scholarly work suggested that there is no generally agreed upon definition of KM. Begoña Lloria (2008) discussed the lack of consensus on KM definitions by emphasising the different perspectives and authors' views on knowledge management in the literature. He pointed out that KM definitions largely came from the strategy, individual and groups, information systems, and human resources perspectives. Moreover, Begoña Lloria expressed knowledge management as policies and guidelines that allow the creation and sharing of institutional knowledge in the furtherance of the firm's objectives. Quintas et al. (1997) depicted KM as a process, one that could be used to critically manage knowledge to meet the company's emerging needs as well as to identify and exploit knowledge assets during the development of new opportunities.

Wiig (1999) pointed out that KM is very complex. It is, in Wiig's opinion, wide and multidimensional. Dalkir and Liebowitz (2011) defined KM as coordination of people, processes, and organization in order to be able to add value by reusing resources

as well as through the process of innovation. Gao et al. (2008) viewed KM as managing a knowledge worker's activities through the facilitation, motivation, leadership, and support of the worker and his or her environment. Table 1 summarises the different definitions and their perspectives found in the literature.

Table 1 Summary of KM Definitions from the Literature

Definition	Perspective
A series of policies and guidelines that facilitate knowledge-sharing (Begoña Lloria, 2008)	Strategy
The process of managing all types of knowledge to meet existing and emerging needs (Quintas et al, 1997)	Strategy
Multi-dimensional field that covers most elements of the enterprise activities (Wiig, 1999)	Strategy and operations
To manage activities of the knowledge worker. (Gao et al., 2008)	Human resources
The systematic coordination of organization's resources and technology generated and applied to knowledge for innovation. (Dalkir & Liebowitz (2011)	Technology

2.2.4 Knowledge-sharing

Numerous authors have identified knowledge-sharing as a key component of knowledge management (Kukko, 2013; Masa'deh, 2016; Riege, 2005; Wang & Noe, 2010). Riege (2005) suggested that KS is fundamental to KM strategy. According to Cabrera and Cabrera (2005), KS is a prerequisite to the success of KM programs and a company's ability to compete. To stay competitive, organisations depend on their staff to generate new knowledge. Consequently, employees must first share their hard-earned knowledge with other employees who are potential opponents in a challenging workplace where jobs could be scarce.

This implies that KS is a key practice that leads to better organisational productivity and system of KM. KS enables teams and individuals to develop efficient solutions to problems in the workplace by reducing duplications of effort, by saving time, by creating innovative solutions, and by establishing a cooperative continuous learning environment (Von Krogh et al (2012). Cabrera and Cabrera (2002) stated that KS is

exchanging data, ideas, technology, and experiences between a group of employees, or individuals. This data can be explicit or tacit.

Considering the tacit view, Cross and Cummings (2004) described KS as provision of task information or feedback related to a product or task. However, concepts like transfer sharing and exchange were associated with knowledge and used interchangeably in the literature (Jonsson, 2008: Wang & Noe, 2010). Some researchers used both terms in two different studies when arguing the same concept (Riege, 2005, 2007). Wang and Noe (2010) considered knowledge exchange to include both the donor and the pursuer of knowledge. By contrast, transferring the knowledge only refers to the efforts associated with moving the knowledge across the organisation and not between individuals (Szulanski, Cappetta & Jensen, 2004, as cited in Wang & Noe, 2010). Berggren et al. (2011) establishes that knowledge transfer occurs in a unidirectional flow from one point to another. A review of the existing literature generally indicated lack of common definitions for knowledge-sharing.

Talja (2015) argues that considering knowledge-sharing only as an act of one person to another suggests that knowledge-sharing is a one-way process. It is, in fact, a “collective and collaborative effort” (p. 1) that occurs as a natural part of being an academician. Talja (2015) further argues that strategic information is shared, paradigmatic information is distributed, directive information is given, and social information is shared. Each of these types of information may be shared in a variety of ways that can range from sharing among colleagues in a formal setting to sharing among a wide variety of individuals in a social setting. Thus, knowledge-sharing is not limited to only one venue. Further, the author of this thesis inferred from Talja’s work that some of the lack of information on knowledge-sharing may be due to a difference in semantics; in some fields, the term ‘information sharing’ may be more common than the term ‘knowledge-sharing’. Therefore, this study also considered studies that utilized the term ‘information sharing’ rather than simply concentrating on studies of knowledge-sharing.

Given its value, researchers and practitioners attempted to identify motivators and enablers of knowledge-sharing among workers (Ipe, 2003). Although KS is viewed to be significant for organizations, it will not be attained if there is a lack of sharing culture (Ipe, 2003). Therefore, creating knowledge-sharing culture (KSC) is vital for the success of organizational knowledge management (Suhaimee et al., 2006). Early knowledge-sharing research focused mainly on information technology as the key inhibitor that would enable KS and enable the creation of KS culture (Leidner, Alavi, & Kayworth, 2010; O'Dell & Grayson, 1998). This was perceived as the hard-track approach to knowledge-sharing (Shin, 2004). Post hard-track studies in the 1990s began to focus on softer issues (Wang & Noe, 2010).

2.2.5 Scoping KS at the Organizational Level

According to Riege (2005), motivation to share knowledge is impacted by group of elements relating to organisational, individual, and technological context. Chennamaneni et al. (2012) suggested similar segmentations in their development of a model of knowledge-sharing motivation. In the organisational context, culture was widely discussed as a key influencer in managing knowledge-sharing (Ardichvili et al. 2003; Leidner, Alavi, & Kayworth, 2010; Kankanhalli et al. 2005). Similarly, leadership, organizational trust and incentives have been inextricably linked to KS behaviour (Ardichvili et al., 2003; Bock et al., 2005, Fahey et al., 2007; Jahani et al., 2011; Riege 2005;). The theoretical context for these organizational elements is examined next.

Leidner, Alavi, & Kayworth, (2010) noted that individuals should be aware of the type of culture in which they are working because it affects the type of knowledge considered important for sharing according to the organizational culture and sub-culture. Cultural classifications are important to understand in the context of organizational knowledge-sharing. A number of organisational culture classifications were developed. One of the most notable classifications was developed by Handy (1991). In the Hardy classification, culture is divided into power, role, person and task. Figure 2 highlights the characteristics of each classification.

Power	Person
▪ Emphasise central figure ▪ Few individual holds power ▪ Few layer of bureaucracy	▪ Emphasise on the interests and decisions made by individuals ▪ Power in the hand personal and mutual consent
Role	**Task**
▪ Bureaucratic in nature ▪ Power comes from role not individual in that role	▪ Emphasis in individual talent and profession ▪ Power in the hand of professionals

Figure 2. Organizational Culture Classifications (Handy, 1991)

Handy (1991) used his experience working for an academic institution (which is the context of this study) to highlight previous culture classifications. He asserted that academics enjoy great level of autonomy, independence, and job security and are managed by their approval, not by a position of power. Handy added that those same characteristics professors enjoy are barriers to knowledge-sharing and any organizational change deemed necessary for that matter.

A number of authors have acknowledged the effect of organisational trust on knowledge-sharing (e.g. Casimir et al., 2012; Convery, 2011; Kukko, 2013; Masa'deh, 2016). While Convery identified trust as a prerequisite of knowledge-sharing among employees, Kukko (2013) empirically concluded that lack of trust among employees is a barrier to KS. Hence, organizational trust could affect the tendency of employees to share information with higher ranked employees. Empowerment of employees, access to information and open communication were also cited as an enabler of trust by Mishra and Morrissey (1990). Although empowerment of employees would lead to greater knowledge-sharing, sharing with peers was affected more profoundly by the level of interpersonal trust.

Several studies have affirmed the role of incentives in promoting knowledge-sharing in the job setting (Ardichvili et al., 2003; Bock et al., 2005, Fahey et al., 2007; Jahani et al., 2011; Riege 2005;). Bock et al. (2005) empirically illustrated that extrinsic rewards in the form of organizational incentives were to have a positive effect on KS intention. Riege (2005) listed a lack of organizational rewards and recognition system as an organizational barrier to knowledge-sharing. However, in an earlier

study by Bock and Kim (2002), the authors found a negative relationship between incentives and attitudes towards knowledge-sharing among employees in four large South Korean companies.

Many studies have been found on the subject of leadership. Scholars have affirmed that leadership behaviours are an important element of organizational success (Bass & Stogdill, 1990). Schein (1992) established and acknowledged the critical importance of leaders in shaping the organisational culture. Prior research also identified two key types of leaderships: transformational and transactional. Both of these types of leadership were based on the work of Bass (1985) and Burns (1978).

Typical characteristics of transformational leader are a desire to influence others and to show self-confidence and strong moral values. Behaviours typically include strong goal articulation, the communication of high expectations, and development of the strong role model (Northouse, 2013). Transactional leadership involves some kind of exchange between leaders and co-workers (Bass & Avolio, 1994). This exchange could be in the form of salary increases. Both transactional and transformational styles were found in the literature to be positively associated with knowledge-sharing (Politis, 2001). Bryant (2003) was also positive about the role of transformational leaders in encouraging a KS culture. Politis's (2002) empirical findings suggested a positive relationship between transformational leadership and the follower's knowledge acquisition. Wickramasinghe and Widyaratne (2012), who found no effect of leadership on KS among employees in an IT company, did not support previous findings.

2.2.6 Scoping KS at the Individual Level

Studies on individual motivators to share knowledge have often utilised behavioural models as a basis for their research (Bock et al. 2005; Kim & Lee, 2006). Individual sharing behaviour has been strongly linked to intention, attitudes, subjective norms, trust, rewards, incentives, demographic profile, and communication mediums (Kukko, 2013; Von Krogh et al., 2012; Wang & Noe, 2010; Wang & Wang, 2012; Wickramasinghe & Widyaratne, 2012). The theoretical context of these elements is discussed next.

Staff members cannot be forced to share their knowledge. Organisations have to consider what influences and motivate employees to share. Two significant models that have been used by researchers interested in such influencers are the Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (Ajzen, 1991; Fishbein & Ajzen, 1975). According to Fishbein & Ajzen (1975), engaging in a specific behaviour is determined by individual's intention to perform that behaviour. The intention is determined by attitude (which mirror individual beliefs) and subjective norm (which is affected by normative beliefs and motivation to comply with beliefs). The Theory of Planned Behaviour (TPB) model is an extension of TRA by adding an additional construct, namely perceived behavioural control (PBC). Ajzen (1991) believed that this would consider situations where the individual lacks control over the behaviour.

Social and economic capital concepts were adopted which are based on human interaction where there is an expectation of trade or reciprocity (Chen & Hung, 2010; Moore, 1994; Platteau, 1994; Wasko & Faraj, 2005). These concepts were associated with individual knowledge-sharing motivators. For example, Wasko and Faraj (2005) used the social capital concept to investigate what would influence people to share their knowledge with strangers on electronic networks of practice. Chai et al. (2012) suggested a positive link between social networks and sharing knowledge. Chen & Hung (2010) applied a social economic approach for their model to examine KS behaviour in online communities. The results show that reciprocal norms, interpersonal trust and knowledge self-efficacy were substantial in affecting KS behaviours in professional virtual communities. Both social and economic capital concepts suggest that employees participate in exchanging activities with reciprocal expectation; employees are also embedded in social networks. This concept would explain why academics find online social opportunities to be very efficacious, as well as why some level of knowledge-sharing seems to be accomplished over these networks.

Bandura (1982) suggested that self-efficacy has the highest impact on people's expectations. This would apply whether the expectation was of an extrinsic or intrinsic reward. According to Kuo and Young (2008), individual KS behaviour had a substantial association with perceived self-efficacy (Schwarzer & Warner, 2013).

Self-efficacy in this context is the perceived ability to do something. If individuals do not believe they can do something, they are very unlikely to attempt to do try to do it. Thus, there is a link between self-efficacy, motivation, and behaviours. Chiu et al. (2006) employed a model to explain the relationship between motivation factors and KS behaviour. They identified several enablers for knowledge-sharing behaviour including trust, social ties, and reciprocity expectations. Skaalvik and Skaalvik (2014) also showed that self-efficacy is linked with ability to utilize behaviours that might novel to them. Individuals with greater levels of self-efficacy were far more likely to take new actions. It was argued that perceived expectation of obtaining value increased an individual's willingness to engage in knowledge-sharing activities (Nebus, 2004).

Knowledge-sharing normally involved costs for the participants (Convery, 2011; Von Krogh et al, 2012). Costs included time, effort and potential loss of ownership and power. Research suggests that employees normally consider their knowledge as a source of power (Bartol et al. 2009; Chennamaneni et al., 2012). By giving up this knowledge, employees would feel that they are losing the benefits associated with their job security, making them potential candidates for redundancy (Chennamaneni et al., 2012). This would negatively affect KS in the organisation, as employees who believed they might be made redundant would tend to hoard their knowledge. It is possible to provide economic incentives to promote individuals to share their knowledge, however. These incentives would include salary increases, bonuses, job security and other factors (Abdullah et al, 2008; Bock et al, 2005; Fullwood et al, 2013).

Interpersonal trust has been widely discussed in the knowledge management and sharing literature. Earlier, Von Krogh, Nonaka, and Rechsteiner, (2012) emphasized the role of interpersonal trust in facilitating KS in the organizational setting. Convery noted that trust is the center of knowledge-sharing. Hislop (2013) identified it as critical factor to enable KS among employees. Riege (2005) included trust among employees as an individual barrier to knowledge-sharing intention among workers. Wickramasinghe and Widyaratne (2012) concluded after an empirical investigation of 150 software developers that interpersonal trust significantly influenced KS. Choi et al. (2008) showed that trust among staff members was highly significant to

promote knowledge-sharing activities. Similarly, Andrews and Delahaye (2000) concluded that lack of trust between employees would impair KS practices and discourage employees from sharing knowledge. Although several studies empirically reported the importance of trust between employees as an enabler of knowledge-sharing, Kim & Lee (2006) found no statistically significant association between trust and KS among employees in the public sector.

2.2.7 Scoping KS at the Technological Level

Existing KS literature listed many terms associated with technology including information systems (IS), KMS, and Information Technology (IT). They are depicted in the literature as KS facilitators jointly with organizational and human elements. Many authors (Ahmad & Doghouse, 2010; Kanaan & Gharibeh, 2013; Sharma et al., 2012; Siddique, 2012; Seba et al., 2012) cited the positive role of technology in enabling KS. However, emphasis on the right technology to fit employee needs while promoting communications methods was prominently stressed by several authors (O'Dell & Grayson, 1998; Riege, 2005; Tsai et al., 2013).

As the soft track of KS research developed, studies began to examine the relationship between technology and other KS factors like trust and culture in promoting organisational knowledge-sharing (e.g. Choi & Lee, 2003; Golden & Raghuram, 2010; Siddique, 2012; Young et al., 2012). Siddique (2012) argued that technology infrastructure was less emphasised by workers compared to the trust and knowledge-sharing culture. Young et al. (2012) examined KMS implementation. In this article, the authors showed that mere implementation of KMS did not promote KS. Instead, critical cultural factors should be stressed. In contrast, technology usage by shy employees might be appropriate for sharing knowledge (Connelly & Kelloway, 2003). Technology alone does not triumph effective KS environment in the absence of individual and organizational components like trust, culture, organisational climate, and leadership support. On the contrary, systems and technology tools were identified as hurdles to KS (Riege, 2005; Smith & Mckeen, 2003). Riege (2005) argued that impractical expectations of KMS, lack of training on KMS, poor usability and design of technology systems would impede KS efforts. In this context, the role of management in ensuring the appropriate selection of suitable technology and systems to supplement the prevailing organizational culture

was also greatly stressed (Berlanga et al., 2008; Tsai et al., 2013). According to Hislop (2013), trust can be difficult to develop using virtual communication. In this regard, trust might act as a KS barrier.

2.3 Context of Higher Education Institutions

The last several years has clearly experienced powerful sense of interconnectedness within the higher education (HE) industry across the world (Altbach, 2013). Students, academics, and knowledge associated with universities and colleges are connected to the knowledge-based economy (Altbach et al., 2009). The growing interest of governments, universities, and academicians to position themselves in the worldwide stage has made growth and expansion a priority. Growth efforts included the attraction of students, international researchers and research consortiums, as well as the internationalization of the higher education degree programs (Jons & Hoyler, 2013).

The recent economic crunch raised economic concerns in HEIs across the globe. The situation is intensified by slowing economic growth in many countries, including shrinking economies in many high-income nations (Altbach et al. 2009). The World Bank reported in 2008 that economic crisis could force governments to cut funding from primary and higher education (Brumby & Verhoeven, 2010). This trend meant that public universities should be encouraged or even required to reduce dependence on public funding and adopt an entrepreneurial and competitive approach.

According to Omerzel et al, (2011), HEIs are unique establishments with knowledge as their input and output. Universities play major roles in creating knowledge through research, and distribute it through publications and interaction with industry (Fullwood et al., 2013; Kim & Jue, 2008; Rowlley, 2000). Universities are utilized as transfer instruments to equip students with the required knowledge (Tippins, 2003).

As discussed earlier, many challenges faced by HEIs have been cited in the literature (Cranfield & Taylor, 2008; Kim & Ju, 2008; Levine, 2000; Middlehurst & Woodfield, 2006). Some of these challenges are: the transformation to the knowledge based economy, globalization, the tendency of HEIs to internationalize,

rapid changes in the world economy, the paradigm shift from teaching to learning, new technologies, lack of government funding and competition. According to Birgeneau et al, (2005), HEI need to respond to societal challenges where knowledge, innovation are key drivers of competitive advantage.

Subsequently, HEIs continuously strive to adopt new practices, technologies, and policies to overcome challenges, serve their society, and compete on an international level. Since HEIs are comprised of many different colleges, it is argued that universities are made up of many cultures and sub-cultures (Tierney, 1988). These cultures are citied and categorized in the literature under the categories of professional, institutional, departmental, and discipline-related cultures (Austin, 1990; Clark, 1987; Kim & Ju, 2008; Lee, 2007).

Clark (1987) argues that the professional culture of faculty and academic staff impact knowledge dissemination in HEIs. Faculty and teaching staff arguably are part of a mixture of the culture that they reside in at the organizational level (Kim & Ju, 2008; Tierney, 1988). The literature referrers to the academic culture in which it is described as the unique behaviours and characteristics of faculty members as they deal with overlapping sub-cultures at the institution and departmental level (Austin, 1990; Clark, 1987). Usually these cultures will shape the way teaching staff will teach students and interact with other faculty members (Umbach, 2007).

The advances in information and communication technology in the past two decades enabled people to better communicate, work, and learn. The shift from secluded computers to a globally connected network allowed us to share many aspects of lives (Suber, 2012). Many practitioners and scholars started to call it the digital revolution. Similar to other sectors, higher education was affected by the digital revolution on many fronts (Kim & Ju, 2008). Teaching, learning, research, distance learning, online learning, e-learning, collaborative research and virtual learning were concepts introduced and exchanged in today's universities. Due to the nature of HEI business of creating knowledge through research and disseminating it through publication (Rowley, 2000), both researchers and publishing communities witnessed an explosion of interest and movement towards open access scholarship and publishing (Antelman, 2012).

2.3.1 Perspectives on Knowledge in HEIs

The existing literature specified two types of knowledge. Explicit knowledge is arguably the easiest to codify and is needed by academic institutions in order to communicate how the organization functions (Songsangyos, 2012). Explicit knowledge can be found in research reports, theories and teaching manuals (Kim & Ju, 2008). Quinn et al. (1996) refers to this knowledge as professional intellect. By contrast, implicit or intangible knowledge is exemplified by best practices, research and teaching skills, as well as professional experiences. Kim and Ju (2008) suggested that when both knowledge types are exchanged, faculty members are freed to do more research, interact more with students, and enhance quality control on course materials.

Saad and Haron (2013) listed three categories of knowledge that academics could exchange: coded, social, and institutional knowledge. Institutional knowledge refers to university key activities such as research, expertise, and policies. Social knowledge is related to the shared culture, beliefs, values, ethics, and norms. The third type of knowledge is coded knowledge; this type includes knowledge shared among academics in electronic or written format. Examples of electronic shared knowledge include lecture slides, videos, and pictures. Written shared knowledge includes tutorials, working papers, and reports. Fullwood et al. (2013) identified comparable themes of knowledge types: research knowledge and activities, teaching and learning resources, university processes and procedures, and social and work news. On the other hand, knowledge exchanged in HEI was classified into academic explicit knowledge, academic tacit knowledge, organizational explicit knowledge, and organizational tacit knowledge (Li et al., 2013). Table 2 summarises the types of knowledge exchanged in higher education found in the literature.

Table 2. Examples of Types of Knowledge Shared in Higher Education

Type	Explicit	Tacit
Academic	Syllabus	Application of educational paradigms
	Information in presentation slides	Operationalizing and delivery of the information
	How to write a research paper or assignment	Extracting the information from the paper and using it

Type	Explicit	Tacit
	Theory behind marketing strategies	Using the strategies
Organizational	Procedures	Reasons for having and applying the procedures
	Regulations	How to use the regulations to be safe
	Institutional plans	How to apply the plans to achieve institutional success
	Accounting procedures	Knowledge gained from experience in applying the procedures
Operational	The organization's recruitment procedures	How to use the procedures to get good recruits
	Staff development expectations	Using the information to develop staff
Social	How to use YouTube or Facebook	Using YouTube and Facebook to improve the quality of student and staff recruits
	Stated beliefs and values	What the beliefs and values mean in terms of operations
	Behavioural expectations at the university	What these expectations mean in practice

2.3.2 Knowledge-sharing in HEIs

Many studies in the commercial and public sector have revealed KS as the fundamental element of KM process (Kukko, 2013). Universities and colleges are generally considered as a significant platform for sharing ideas (Martin & Marion, 2005). KS is critical in knowledge intensive organizations. Despite the importance and success of KS programs in other sectors and the extent of HEIs as knowledge-centred organisations, Cronin (2000) claimed that there is no guarantee for similar success in knowledge-sharing in the HEI sector. He attributed his scepticism due to the lack of shared culture in the higher education sector compared to the corporate culture in the commercial sector. HEIs are neither businesses, voluntary organisations nor consultancy firms, although fundamentals of all the three do exist in HEIs. HEIs face additional challenges as societies are moving to the knowledge-based era and economies are transforming into the knowledge-driven economy (Kim & Ju, 2008).

Sharimllah et al. (2007) argues the universities' approach to knowledge-sharing enables the transition to the knowledge based era, enhances sharing behaviours, improves educational curriculums, and leads to overall organizational improvement in HEIs. However, current literature indicates that there are only limited attempts by universities to utilize KS strategies that are similar to the corporate and service sector. Ramachandran (2013) claimed that there were very few efforts by HEIs to apply extensive KS programs. Moreover, Kim & Ju (2008) highlighted the inadequate research focusing on KS in the HEI sector. Lack of research in the area of KS and KM in general in HEIs could be attributed to the fact that there have been few efforts by universities to utilize the management and sharing of institutional knowledge on a formal level (Chong et al., 2011).

Additionally, there is evidence that the communications between scholars is becoming increasingly related to social interactions (Vyas & Trivedi, 2014). The line between work activities and purely recreational contacts is becoming quite blurred. Staff now uses social media not only for connecting socially but for blogging (personal and professional), chatting in chat rooms, using instant messenger, commenting on message boards, and bookmarking information that is pertinent to their personal interests and professional activities (Vyas & Trivedi, 2014). Increasingly, these communications are becoming a part of the classroom's activities. Vyas and Tivedi (2014) pointed out; classes and faculty are even using virtual worlds to communicate knowledge. They suggest that Facebook, Twitter, Blogging, using RSS feeds, You Tube, Plus Share, Wikipedia, My Space, Ning, Meebo, LinkedIn, Flickr, TeacherTube, Second Life, PBwiki, Footnote, Community Walk, SlideShare, and Digg are all ways that can be used to disseminate knowledge in a social manner.

In a more formal setting, the key benefit of KS in commercial organizations can be linked to cost reduction, improved productivity, and customer satisfaction. The impact of KM in HEIs, however, was frequently associated with the ability to locate where the knowledge resides and its use for the benefit of teaching, scientific research and learning activities (Adhikari, 2010). This is believed to be attributed to the role of HEIs in providing education through teaching activities and creating knowledge through the conduction of scientific research (Naser et al., 2016; Tan,

2015). Additionally, Kim and Ju (2008) associated lack of KM and KS in HEIs with less ability to acquire research funding, a lower student retention rate, a lower student enrolment, lower ranking, lower graduation rates, and a lower number of competent academic human resources.

2.3.3 Knowledge-sharing Challenges in Academia

The reluctance to exchange knowledge due to perception of loss of status or power in organisations in general was discussed earlier. However, according to Tippins (2003) reluctance to share knowledge can be a significant issue in academia because of the emphasis on publishing primary research, a highly individualistic undertaking. Tan (2015) suggested that KS in academia is influenced at the organisational, technological, and individual levels. Similarly, Nourlkamar and Hatamleh (2014) suggested segmentation in their study of KS barriers between academics in Malaysia. In the organisational context, culture was commonly discussed as a key influencer in managing KS in academia (Fullwood et al, 2013; Lee, 2007, Nourlkamar & Hatamleh, 2014, Tan, 2015). Leadership, trust, incentives, subjective norms, and organizational attitudes towards KS (Nourlkamar & Hatamleh, 2014) have been associated with KS behaviour in academia. The theoretical context for these challenges will be examined next.

2.3.4 Organizational Level Challenges

Organisational culture was found by many authors as a primary influence to promote KS within institutions. According to Hislop (2013), considerable debate exists on the role of culture in KS implementations. Despite these debates, several studies established that culture could act as an enabler or barrier to KS (Bock et al., 2005; Fullwood et al., 2013; Norulkamar & Hatamleh, 2014; Riege, 2005). King (2008) found that subcultures like professional and team culture would impair KS activities. In the context of universities, subcultures may include collegial culture, bureaucratic culture and corporate culture (Cronin, 2000; Kim & Ju, 2008; Rowley, 2000).

On-going debate on the role of culture in educational institutions can be observed in the literature of knowledge management and sharing (Cronin, 2000; Cranfield & Taylor, 2008; Fullwood et al., 2014; Mills & Smith, 2011). Cronin (2000) suggested

that HEIs lack a universal culture that would be similar to corporate culture. As an example, most corporations share certain cultural facets, but because of the wide variety of facets of educational culture, HEIs do not have a universal culture.

Collegial culture typically describes the characteristics of universities. Collegial culture places emphasis on individual autonomy. Characteristics of this culture may also in private universities (Fullwood et al., 2013). Lee (2007) suggested that academic departments could be idiosyncratic and complex. He added that cultures could differ even between disciplines in the same department.

Due to the nature of the operational structure in HEIs, sub-cultures could also exist within colleges and even departments in various disciplines (Lee, 2007). Usually these cultures will shape the way academics will teach students and interact with other faculty members (Umbach, 2007). Rowley (2000) suggests that effective KM in HEIs might require a significant change in culture, values, and structure of the academic organization. This concept is linked to the idea that there is no universal academic culture. Developing a universal or generic academic culture or cultural facets might be a first start, but it is also possible that individual universities simply need to adjust their cultures.

Organizational climate is believed to be associated with organizational culture, but it takes a different perspective. Literature indicates that culture describes the organizational beliefs, values and artefacts, but climate explains the features of the organization from the perspective of employees (Schein, 1985). Organizational climate is more concerned with subjective impressions, feelings and perception of the actions of organizational members (Gray, 2008). Several empirical studies signified the strong relationship between organizational climate and KS (Abzari & Abbasi, 2011; Bock et al., 2005; Chennamaneni et al., 2012).

Bock et al. (2005) has categorized organizational climate into fairness, innovativeness, and affiliation. Fairness refers to employee's perception that organizational practices are just and fair. Innovativeness concerns employees' perceptions that creativity and innovation are highly regarded by the organization. Affiliation is the perception of belonging to an organization. It should be noted, however, that the Bock study emphasizes the corporate environment rather than an

educational one or an HEI. Chennamaneni et al. (2012) suggested that organisational climate had the highest impact on employees' subjective norms. While studies examined the role of organisational climate on KS in commercial sector, there were very limited studies related to HEI. Given the distinct features of HEIs including autonomy, structure and academic freedom, it can be argued that organizational climate in HEIs is very different than other organizations (Fullwood et al., 2013)

The role of transformational and transactional leadership types in promoting KS were established earlier in this chapter. Since some authors suggested that academics are managed and not led (Davies et al., 2002), it is worth differentiating between managing and leading in the context of HEI. While it is argued that leaders establish directions, communicate vision, motivate people, and ignite change (Huczynski & Buchanan, 2013), Davies et al. (2002) argued that department heads in HEI are missing these leadership traits. Davies et al. (2002) suggested that instead, control and vertical communication are the norm in academic departments.

Yielder and Codling (2004) identified two unique leadership types that only exist in universities: academic and managerial. While academic leadership focuses on the knowledge creation, professional recognition and team acceptance, managerial leadership concerns with control, authority and power. Academic leadership can be found in the classical and traditional collegial universities whereas managerial leadership is associated with corporate and entrepreneurial-type universities. Yielder and Codling (2004) emphasized potential conflict when managerial leaders are tasked with evaluating academic situations. As leadership qualities received attention in the literature, authors like Spendlove (2007) compiled a list of leadership competencies for academic institutions. Table 3 summarises those competencies. The literature indicated that academic leadership abilities are perceived differently from other sectors (Bolden et al. 2012). Significantly, perceived leaders are not confined to management staff but include PhD supervisors, highly regarded researchers, and even former academics. Since academics strive for high levels of autonomy, they are perceived as being self-led.

Table 3. Leadership Competencies for Academic Institutions

Attitude	Knowledge	Behaviour
Flexible, open, honest	Understand academic process	Maintain academic credibility
Discreet, visible	Understand university life	Listen to others
Accept advice	Understand academic process	Motivate and build teams
Admit wrong doing	Understand why it was wrong	Communicate clearly
Sensitive to views of others		Act as role model

Source: Spendlove (2007)

Bolden et al. (2012) suggested that this perception would minimize the effect of managerial processes and noted the fact that managers could certainly still impact the academic working environment. Lumby (2012) argued that the academic environment itself shapes the nature of its leadership. Lumby asserts that such environment is challenging due to complexity of the hierarchy and the level of cultural diversity. However, Lumby (2012) also suggested that there was a feeling among academics that leadership in academia lacked importance.

2.3.5 Technology Level Challenges

The critical role of information technology in the success of KS and KM in general has been well documented in existing studies (Berlanga, et al., 2008). The initial classification of explicit knowledge has placed technology as a key facilitator for knowledge exchange and the generation of new knowledge (Convery, 2011; Kanaan & Gharibeh, 2013; Seba et al., 2012). Seba et al. (2012) argued that considerable attention should be placed by management on the appropriate KS technology to match general corporate culture. Some of the early efforts to utilize KS and technology tools in universities were implemented in University of Leeds, Ohio State University, and Robert Gordon University (Branin, 2003; McManus & Loughridge, 2002; Ratcliffe et al., 2000,).

The objective of these endeavours was to manage explicit knowledge in the organization, and to provide a means of communication between librarians, knowledge staff, and faculty members. Rowley (2000) pointed out that universities around the world possess multiple databases, which are essential for students and academics as well. Databases include student databases, e-library access, and access to e-journals, academic, and lecturer's materials.

Rowley (2000) argued that coordination is necessary between departments in order to manage the knowledge created and disseminated in the university. Without this coordination, it should be questioned if the knowledge ever makes it out of the department or discipline that created it. According to Rowley (2000), access to knowledge repositories enabled collaborative research not only internally but also with other institutions. This normally relates to explicit and not tacit knowledge.

Despite the unique characteristics of HEIs in terms of structures and subcultures when compared to other organizations, universities generally share common governance goals and strive to achieve global status. Academics are considered key staff members that create and disseminate knowledge through teaching and research (Kim & Ju, 2008). Understanding academics' perceptions toward KS in this context would be important to university managers and policy makers.

2.3.6 Individual Level Challenges

Evans et al. (2013) argued that the role of academics in higher education institutions differs depending on the institution, discipline, and even individuals. Earlier studies found significant assumptions relating to the role and responsibilities of academic staff (Bolden et al., 2008; Kolsaker, 2008). Sallis and Jones (2002) classified academics as expert knowledge workers engaged in university-related knowledge activities like teaching and research. In another study, Tight (2002) argued that professors in majority of UK universities are expected to take several leadership and professional roles as well as engaging in teaching activities. These roles would include academic research and administration and managerial tasks (Bolden et al., 2008; Kolsaker, 2008).

Other researchers considered the role of academics as intellectual leaders, since they are seen as key intellectual assets for their organizations (Macfarlane, 2011). Macfarlane argued that there was a mismatch between academics' capabilities, skills, and expectations by university management. In an additional study, Macfarlane (2012) argued that becoming a professor was a way to be promoted, but it also carried more responsibilities and intellectual leadership requirements. He added that even though professors are seen as pure researchers, in fact their roles include much more. They are expected to teach and lead research development activities as well.

Musselin (2007) reported that the capacity to generate and manage research funding plays a major role in recruiting faculty members and professors in countries like Germany and the USA. Subsequently, acquiring research funding and managing research project skills becomes a critical role of faculty members in some universities. Handy (1991) asserted that academics enjoy a great level of independence and job security. According to Handy, academics are approval-driven, not driven by the desire to have a position of power.

The challenge to exchange knowledge where there is the perception that knowledge-sharing will lead to a loss of status or power in organisations in general was discussed earlier in the research. However, Tippins (2003) argued that this perception could be a significant issue in academia because of the emphasis on publishing primary research in order to maintain one's position. As a result, publishing becomes a highly individual activity.

An additional principal challenge dominating the individual level of concern is the general lack of trust (Chen & Hung, 2010; Hislop, 2009; Jain et al, 2015). According to Fong and Chu (2006), the lack of trust among academics and a general fear of KS had a negative impact on KS activities. This suggests that academics who are willing to engage in KS activities with colleagues must trust that colleague. In a pragmatic view, trust is the key to knowledge contribution in order to ensure that the academics partners will not use their knowledge against each other's interests. In order for knowledge seekers to trust each other, they must also be certain that they will receive correct or true knowledge from each other (Yusof & Suhaimi 2006).

Authors have cited the concept that self-efficacy had an impact on knowledge-sharing (Bock & Kim, 2002; Lin, 2007b; Olatokun & Nwafor, 2012; Tohidinia & Mosakhani, 2010; Ye et al., 2006). Ajzen (2002) described self-efficacy as the ease or difficulty an individual perceives to exist when performing a behaviour. This idea is closely related to the works of Bandura relating to self-efficacy, particularly in learning (Bandura, 1991). Bandura's social cognitive theory focuses on the concept that self-control depends on the individual's commitment to the task, ability to be consistent, and the ability to self-monitor. Further, self-efficacy can be affected by cognitive inputs, behavioural impacts, and cues from the environment (Bandura, 1991). Thus, while self-efficacy affects knowledge-sharing, the environment that surrounds the knowledge-sharing also affects it. This relates to the concepts of trust (or mistrust) expressed earlier in this chapter.

Knowledge self-efficacy, derived from self-efficacy theory (Stone, 1974) is the belief that an individual would value his or her knowledge (Cabrera & Cabrera, 2005). The literature has implied that self-efficacy encourages academics to have faith in their ability to share valued knowledge with their colleagues (Bock et al. 2005; Bock & Kim, 2002; Kankanhalli et al. 2005; Lin et al. 2009; Wasko and Faraj 2005). According to Kankanhalli et al. (2005), when people believe that their knowledge would improve work activities, processes and productivity, they lean toward sharing knowledge. Therefore, it can be argued that academics having greater self- efficacy are persuaded to share their knowledge with others while those who have little self-efficacy are less inclined to contribute their knowledge because they assume that their contribution would not bring benefit or have any positive impact on the university.

Convery (2011) suggested that reciprocity as a motivational element can enhance the mutual relationship between individuals when it concerns knowledge-sharing. Bock et al. (2005) argued that individuals would share their knowledge more often knowing that they will gain from their sharing behaviour because they expect to receive useful knowledge in return. In this context, Kankanhalli et al. (2005) refers to reciprocity as future knowledge requests that will be met by others. According to Lin, (2007), reciprocal behaviour could institute a sharing culture by inspiring faculty members to improve relationships and expect help from each other. It can be

predicted that when academics have confidence that they can acquire reciprocal paybacks from others by sharing their knowledge, they will have a higher likelihood to perceive KS positively. Consequently, they will have a greater inclination to impart what they know within their department and across the university.

2.4 Research into Knowledge-sharing Among Academics

In a meta-review of existing literature, Nourlkamar and Hatamleh (2014) considered several knowledge-sharing barriers among academics in the Malaysian context. The researchers clustered the literature around internal and external barriers. They found that lack of trust between academics was the key barrier to KS. While organizational barriers covered an incentive system, management support, lack of team spirit, a negative organizational culture, and lack of organizational support also interfered with KS. Technological barriers included difficulty of selecting appropriate IT tools for sharing and collaboration, and a general lack of IT literacy among academics.

An empirical study by Othman and Skaik (2014) found that academics' intentions, attitude, subjective norms, and self-efficacy had a significant effect on knowledge-sharing behaviour. These results were consistent with previous studies on knowledge-sharing (Babalhavaeji & Kermani, 2011; Chennamaneni, A. 2006; Ryu et al., 2003; Seba et al., 2012). However, Othman and Skaik also found that controllability had no impact on academics' intention to share knowledge. In the knowledge-sharing context, controllability refers to the individual's belief that performing the sharing behaviour is up to person and is based on the available resources (Ajzen, 2002). This finding, however, was not supported by other studies (Chennamaneini et al., 2012).

Alotaibi et al (2014) proposed a conceptual knowledge-sharing model among academics comprising of the following factors: motivations, IT acceptance, organizational culture, and subjective norms. In a Malaysian study, Ramayah et al. (2014) claimed that although there is consensus among researchers in the literature (Cheng et al., 2009; Kim & Ju, 2008) that academics tend to hoard their intellectual resources, there was no available instrument to verify that claim. The outcome of the Ramayah et al. study was the application of the knowledge-sharing Behaviour

Scale (KSBS) instrument developed by Yi (2009) to empirically measure academics' knowledge-sharing behaviour. The empirical work of Jolaee et al., (2014) suggested that attitudes are positively related to knowledge-sharing intention while self-efficacy, subjective norms, and trust were not found to affect sharing intentions. The insignificant relationship between trust and knowledge-sharing activities was a contrast to previous studies where trust was identified as key KS antecedent (Convery, 2011; O'Dell & Grayson, 1998). This inconsistency might be related to the context of the study among academics and the social context among faculty members. Moreover, extrinsic rewards were found not to have positive effect on knowledge-sharing among academics; this was also inconsistent with earlier findings (Liebwitz, 1999; Quinn et al., 1996). It is possible that these inconsistencies could be contributed to the context higher education while other studies were in the commercial sector.

Fullwood et al. (2013) carried out a further survey of knowledge-sharing among academics in 11 UK universities. Fullwood's results suggested that knowledge-sharing culture among academics in HEIs is idiosyncratic in nature and self-centred. They concluded that attitudes towards knowledge-sharing, reward expectations, organizational climate, technology platforms, and leadership would influence knowledge-sharing behaviour among academics. Similarly, Howell and Annansingh (2013) examined academics' cultural influences on knowledge generation and sharing in two universities. They found that limited knowledge-sharing practices among academics were observed in the "Post 1992" university, while Russell group universities demonstrated higher rate of knowledge-sharing activities among academics.

In a survey-based study by Goh & Sandhu (2013), authors utilized the Theory of Planned Behaviour (TPB) to examine the effect of emotional factors on knowledge-sharing intention among faculty members. The empirical findings showed that all academics have a positive attitude toward knowledge-sharing. They also showed that active commitment, trust, subjective norms, attitudes, and perceived behavioural control have a significant impact on predicting the intention to share knowledge among academics. It was highlighted that perceived behavioural control (PBC) was the strongest predictor for knowledge-sharing among all other factors.

PBC demonstrates the importance of availability of adequate information technology tools to enable sharing of knowledge. This finding is in line with other studies conducted in commercial sectors (Leidner, Alavi, & Kayworth, 2010; Dalkir, 2005; Kukko, 2013).

A study by Nordin et al., (2012) found that only attitudes, compliance norms, normative norms, and PBC have influenced knowledge-sharing behaviour among academics. Subjective norms did not appear to influence academics' decision to share knowledge. This finding contradicted another study described earlier in this section by Goh and Sandhu (2013) where subjective norms were found to impact intention of academics to share knowledge. While both studies were conducted in the same culture and context, this inconsistency could be attributed either to better supported organizational cultures in which sharing knowledge was encouraged in public universities, or to the fact that questionnaire's respondents did not believe that the opinion of others around them would influence their decision to engage in knowledge-sharing activities.

A quantitative study by Babalhavaeji and Kermani (2011) found that faculty with higher intention to encourage knowledge-sharing had positive attitudes towards knowledge-sharing. Cheng et al. (2009) argued that withholding knowledge and intellectual resources was common in academia. This argument was consistent with the work of Basu & Sengupta (2007) where lack of knowledge-sharing culture and individualistic activities were found in business schools in India. In a cross-sectional quantitative study in South Korea, Kim and Ju (2008) reported that perceptions and reward systems received high scores in influencing academics' knowledge-sharing behaviour. Trusting academics to share material was not significant. However, this finding contrasts with other studies which had identified trust among employees as a key factor to influence knowledge-sharing behaviour (Convery, 2011); Kim & Lee, 2006; O'Dell & Grayson, 1998). It is possible this inconsistency can be related to the individualistic and independent nature of faculty work, where academics are cautious or unwilling to share information with any one.

2.5 Literature Critique

The literature review reflected several debates on differentiating knowledge from data and information. The literature discussed the main types of knowledge including tacit knowledge (e.g. know-how) and explicit knowledge (e.g. written or coded knowledge) and organizational knowledge. The knowledge creation and categorisation model was presented. Sharing of knowledge was recognized in the literature as the key motivation to create knowledge management programs.

Due to the importance of knowledge, the idea of KM was born and recognized as set of processes aiming to enhance and to optimize existing and future needs of organizations. The literature highlighted that KM not only focuses on managing knowledge, but on the engagement of individuals and groups across the organization to enhance overall performance. KM was extensively linked to knowledge-sharing during the review of the literature. Knowledge-sharing was widely acknowledged as critical success factor of KM programs. Conversely, the research showed that a lack of knowledge-sharing culture would impede the success of KM programs.

Understanding key issues influencing knowledge-sharing is critical to create successful KM programs. Thus, it is recognized that managing knowledge-sharing programs effectively can greatly improve work quality, decision-making and overall competency of staff. A number of theories, which attempt to explain knowledge-sharing behaviour of individuals and factors influencing that behaviour, were found in the literature. The Theory of Planned Behaviour (TPB) was utilized to identify factors influencing knowledge-sharing among individuals. This chapter highlighted key issues of knowledge-sharing and creation that are facing higher education.

Existing studies investigating knowledge-sharing among academics in higher education have a variety of limitations, which need further research. These limitations are summarised in table 4, which is presented on the next page. Of the thirteen studies, eight were limited to specific nations. Many did not apply behavioural constructs or measure knowledge-sharing. Several studies did not utilise a theoretical lens.

Table 4. Research Limitations

Study	Research Limitation
Alotaibi et al. (2014)	The proposed model was not empirically validated or tested.
Babalhavaeji & Kermani, (2011)	Framework focused in Iran only and targeted two universities Intention to share knowledge only and neglected other TPB Factors.
Cheng et al. (2009)	Did not apply theoretical lens to examine knowledge-sharing behaviour.
Jolaee et al. (2014)	Framework did not consider the type of knowledge shared among academics and how it was shared. Moreover, it was conducted in one public university in Malaysia only.
Fullwood et al. (2013)	The study used profiling technique by analyzing survey results. No theoretical framework was developed or validated in order to statistically understand relationships between factors.
Goh & Sandhu, (2013)	The study focused mainly in Malaysia again, mainly TPB constructs. The study examined only two independent variables.
Howell & Annansingh, (2013)	The limitation of this study relates to lack of theoretical lens, and lack of empirical validation of factors.
Jolaee et al. (2014)	Framework did not consider the type of knowledge shared among academics and how it was shared. Moreover, it was conducted in one public university in Malaysia only.
Kim & Ju, (2008)	The focus is in Korea only. Moreover, it did not apply behavioural theoretical constructs.
Nordin et al. (2012)	The sample of this study was very small restricted to one public university in Malaysia. Therefore, respondents' behaviour could not be generalized to other type of universities. The study examined the TPB component only, neglecting intention to share knowledge as a predictor.
Othman & Skaik (2014)	The study focused primarily on TPB constructs and neglected other individual, organizational and technological factors found in prior research. The model was limited to intention to share knowledge and not actual behaviour. The study focused in UAE only.
Ramayah et al, (2014)	The proposed tool was used to measure knowledge-sharing behaviour and not to understand why they share or not.
Sohail & Daud, (2009)	The sample size was very limited, only two departments in the university were included. The study lacks measuring knowledge-sharing across the whole university departments. I and neglected social factors.
Suhaimee et al. (2006)	The study focused again in Malaysia and did not utilize any t knowledge-sharing.

2.6 Chapter Summary

This chapter has provided a context for the current research by exploring the literature pertaining to knowledge, knowledge categorisation, knowledge management, and key issues in knowledge-sharing. Knowledge has become the key to competition. It is essential for organizational success in the knowledge-based global economy. Understanding knowledge elements (creation, storing, sharing, re-producing) will enable senior management to create a knowledge-based organization. Nonaka (1995) introduced an influential model of knowledge creation, which has been much critiqued, and this was discussed. Knowledge management definitions were presented and the need to share knowledge surfaced as a common theme in the literature.

As a foundation for this research, the chapter continues by focusing on the way organisational members can be motivated to share knowledge and the influence of the organisational and individual factors that can affect knowledge-sharing. Major knowledge-sharing factors evolving from the literature were then examined. Some such as organisational culture, loss of knowledge power, trust and incentives were grounded in literature. Others such as personal traits, physical structure, time and relevance had received comparatively little research attention but appeared in reviews of knowledge-sharing factors (Riege, 2005; Wang & Noe, 2010) and thus deemed worthy of inclusion.

Higher education context was examined next in the chapter; this revealed high level of autonomy continues to portray higher education institutions. Influencers discussed in relation to sharing knowledge in higher education to some extent mirrored those in the commercial and public sectors; however, the impact of organisational climate emerged as particular characteristics of the sector along with the consequent of academic leadership. Research into knowledge-sharing in higher education sector was subsequently examined along with research on knowledge-sharing among academics. The next chapter looks at the development of a conceptual model for understanding knowledge-sharing influencers among academics.

3.0 CHAPTER THREE – RESEARCH FRAMEWORK AND HYPOTHESES

3.1 Introduction

In the literature review, issues related to knowledge, knowledge management, knowledge-sharing, higher education context and efforts taken place in the past to improve our understanding of KS among employees were discussed. Although there is ample literature that looks at knowledge-sharing influencing factors, there is less research covering academics in institutions of higher education. There are several studies that have investigated KS behaviour among academics (e.g. Cheng et al., 2009: Dyson, 2004; Kim & Ju, 2008; Othman & Skaik, 2014; Suhaimee et al., 2006). Considering the limitations of these studies and the fragmentation of examining KS determinants in HEIs, it is evident that there is a need for further analysis of KS in higher education considering increased strategies by HEIs to achieve globally competitive status.

The current research overcomes these limitations by examining the predicators of KS and proposing a comprehensive yet parsimonious model that identifies antecedents, which might affect KS behaviour among academics. The focus of this chapter is to develop the research framework and the hypotheses for examining the antecedents of academics' knowledge-sharing. The current study adopts the Theory of Planned Behaviour (TPB) as the theoretical framework. TPB is supplemented by determinants from a variety of theories, including economic, social, and self-determination theories. This approach enhances the aim of this study to identify and understand holistically potential antecedents to knowledge-sharing behaviour among academics.

The theoretical background and justification for choosing TPB is described in the following section. A brief overview of the supporting theories utilized for this study follows. The conceptual framework is presented, as well as the hypotheses for conducting this research. The chapter concludes with a summary.

3.2 Theoretical Background

Behaviour is the degree to which an individual decides to perform or not perform a specific action and it is determined by the individual's intention to perform it or not (Ajzen, 1991; Ajzen & Fishbein, 1980). As Robertson (2002) states that knowledge sharing is a human action, therefore, it is an optional behaviour and cannot be forced on individuals. Due to the claimed characteristics of academics like autonomy and idiosyncratic personalities, they may have different perceptions and attitudes toward knowledge-sharing than members in other types of organisations (Kim & Ju, 2008; Fullwood et al., 2013).

To be able to further understand academics' behaviour towards KS, the author has assessed several existing behavioural theories and selected the Theory of Planned Behaviour (TPB). However, TPB was also augmented by additional behavioural determinants well-grounded on other established models. TPB will be discussed in the next section along with other concepts. Theory of Reasoned Action (TRA) was not selected because it does not consider the factors that facilitate the performance of the behaviour referred to as "control beliefs" (Ajzen, 2002). In addition, Technology Acceptance Model (TAM) was excluded because of the focus on user's acceptance and usage of technology and not general individual behavioural examination (Venkatesh et al, 2003).

3.3 The Theory of Planned Behaviour

The Theory of Planned behaviour (TPB) is an extension of the Theory of Reasoned Action (TRA) (Ajzen & Fischbein, 1980; Fishbein & Ajzen, 1975). TRA had limitations that failed to account for behaviours where people have no controllability over the resources required to perform the behaviour. This led Ajzen (1991) to introduce a new construct named Perceived Behavioural Control (PBC). The resulting theory was called Theory of Planned Behaviour (TPB). TPB continues to be one of most influential and popular theories to assess and explain human behaviours (Ajzen, 2001). Moreover, TPB is a well-established theory with pre-determined variables that influence behavioural intention and actual behaviour (Hsieh et al. 2008; Pavlou & Fygenson, 2006; Tanagaja et al., 2015).

TPB suggests three independent antecedents that determine human behavioural intention to perform a specific behaviour: attitudes, subjective norms, and perceived behaviour control (Ajzen, 1991). TPB proposes that the main determinants of an individual's behaviour are the intention to do the behaviour, and Perceived Behaviour Control (PBC). Intention can be described as an indication of readiness to engage in behaviour (Ajzen, 1991). Intention is the result of people's attitude toward that behaviour, while subjective norm and perceived behaviour control are functions of adjacent environment and population in a specific context. Subjective norms emphasize that human behaviour is guided by three beliefs: normative, behaviour and control beliefs. Normative expectations of others and complying with the expectations are called normative beliefs, while the belief about the likely results or consequences of certain behaviours is named behaviour belief.

Beliefs about factors, which could prevent or facilitate the behaviour, are called control beliefs. According to Ajzen (2002), behaviour beliefs create attitudes (positive or negative) toward the behaviour, while social pressure or subjective norm and control beliefs would increase perceived behavioural control (PBC). Ajzen (2002) believes that positive attitude and subjective norm with higher control perception would lead to greater the intention to perform the actual behaviour. The development of beliefs into behaviours is shown in figure 3.

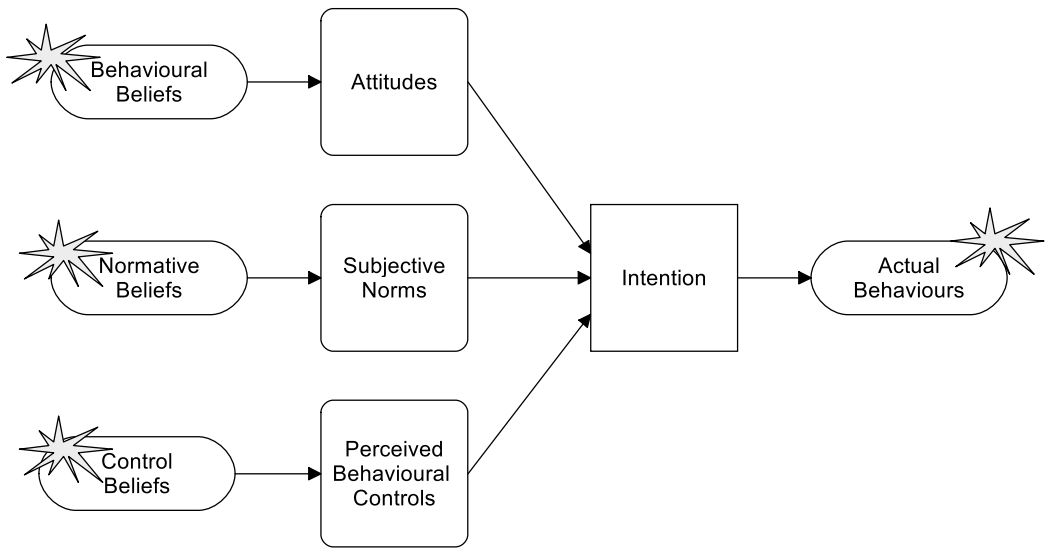

Figure 3. Theory of Planned Behaviour (Adapted from Ajzen, 1991).

Ajzen (2006) recognized that the concept of PBC might be considered as vague. In order to correct this vagueness, he indicated that PBC should be viewed as two interconnected components, those of self-efficacy and controllability. Ajzen explains that PBC has a two-fold role: with intention, PBC can influence actual execution of the behaviour; collectively with subjective and attitude, PBC can influence intentional behaviour. Ajzen (2006) described self-efficacy as being confidence in an individual's ability to perform behaviour. Ajzen (2006) describes controllability, as the individual's believe that there are available resources that would enable the individual to perform a behaviour. Ajzen suggests that a positive attitude and subjective norms would result in greater perception of self-efficacy and controllability, which would in turn lead to stronger possibility that that the individual would perform the behaviour.

TPB has been successfully applied to predict range of human behaviours in many research disciplines. TPB was used in information systems to study the behaviour of complying with information security policy (Ifinedo, 2012). Pavlou & Fygenson (2006) used TPB to predict the process of e-commerce adoption by consumers. TPB was used in health research studies as well. Meadowbrooke et al. (2014) used it to explain behaviour of young men toward testing of HIV. Kerr et al., (2010) used TPB to predict student car traveling intentions and behaviours. TPB was used by to explain and predict intentions and actual behaviour of tourists to revisit sites (Al Ziadat, 2014). Alam and Sayuti (2011) applied the theory to explain halal food purchasing behaviour among people in Malaysia.

In the context of KS, TPB has been used in many studies to predict, explain and understand antecedents to KS intentions and behaviour among individuals (Abzari & Abbasi, 2011; Bock et al., 2005; Chatzoglou & Vraimaki, Goh & Sandhu, 2011; Lin & Lee, 2004, 2009; Tohidinia & Mosakhani, 2010; Nordin et al., 2012). While TPB was arguably one of the most influential applied behavioural theories, researchers have been left with a dilemma on how to contribute further to a well-established model. Therefore, some scholars integrated determinants based on other theories, including Social Exchange Theory, Self Determination Theory and others (Abzari & Abbasi, 2011; Bock et al., 2005; Chennamaneni, 2006; Goh & Sandhu, 2011; Lin & Lee, 2004, 2009; Tohidinia & Mosakhani, 2010; Nordin et al.,

2012). The current research has adopted determinants from other theories in the theoretical perspective for this research.

This researcher has adopted the Theory of Planned Behaviour for the current research because of several reasons. Firstly, TPB has been well established and used in KS studies specifically to clarify intentions and behaviour of people (Lin & Lee, 2004; Bock et al., 2005; Chatzoglou & Vraimaki, 2009; Tohidinia & Mosakhani, 2010; Abzari & Abbasi, 2011). Secondly, TPB has been used to understand antecedents of knowledge-sharing behaviour among academics (Alotaibi et al., 2014; Goh & Sandhu, 2011; Nordin et al., 2012). Thirdly, TPB was selected over TRA because it explains actual knowledge-sharing better than does TRA (Ajzen, 1991). With the introduction of Perceived Behaviour Control (PBC) construct, it was stated that the accounted variances in intention and actual behaviour greatly increased compared to using subjective norms and attitudes as the only constructs (Ajzen, 1991; Conner & Armitage, 1998). The next section will briefly describe theories used to supplement TPB to identify ample set of factors that would influence knowledge-sharing behaviour among academics.

3.4 Self-Determination Theory (SDT)

SDT is a motivation theory introduced by Deci & Ryan (2008). Self-determination theory represents a framework for study of human motivations and personality. It is useful in explaining pro-social behaviours including knowledge-sharing (Gagne, 2009; Leavell, 2017). SDT differentiates between two types of motivation, autonomous and controlled (Deci & Ryan, 2008). Both motivations are commonly referred to in the literature as intrinsic motivation (Gagne, 2009) and extrinsic motivation (Olatokun & Nwafor, 2012). A third type of motivation, named motivation, is in a continuum of various self-determination degrees (Deci & Ryan, 2008).

The adoption of either type of motivations is usually based on the satisfaction of the basic distinctive psychological needs (Gagne, 2009) that were discussed earlier in this dissertation. Individuals who are more intrinsically motivated will embrace self-determined behaviour, whereas individuals who lack motivation will adopt non-self-determined behaviour. People who are intrinsically motivated will likely to be involved in self-determined behaviour such as knowledge-sharing behaviour

because it is enjoyable, personally rewarding, nourishing and in line with the individual's value system (Gagne, 2009).

3.5 Social Exchange Theory (SET)

Social Exchange Theory by Blau (1964) describes people's behaviour from the view of social exchange. The theory originated from the concept of economic exchange. SET suggested that people would engage in exchange behaviour if they believe that they will be somehow rewarded for their efforts. However, SET also predicted that people would not engage in sharing behaviour if they perceive that their reward would not exceed their cost of sharing. Unlike economic exchange, a social exchange relates to softer costs like respect and trust. Economic exchange dealt with mixture of hard costs such as financial and promotions.

Cropanzano, Anthony, Daniels, and Hall (2016) assert that social exchange theory is a set of related constructs rather than one single theory. It is, they relate, a set of conceptual models. They also argue that most social theories and theories of behaviour are sets of behavioural explanations. Cropanzao et al. (2016) also point out that most organizational behaviours (and KS and KM are behaviours of the organization, as well as individual behaviours) have been analysed using one or another of the social exchange theories. Similarly, they point out that negative behaviours can also be explained by their theories. Thus, as they point out, interchanges that are "verbal, passive, and indirect might involve a failure to provide needed feedback" (Cropanzano et al., 2016, p. 4). In this worldview, refusal to provide feedback that is needed to adequately complete organizational demands can be regarded as a form of workplace violence (Cropanzano et al., 2016).

Social interchanges can be positive, or negative, regardless of whether they occur in the workplace or in another venue. Behaviours of management or supervision filter down to those who are being managed or supervised in an organization (Cropanzano et al., 2016). This would apply whether the individuals being supervised are workers or students, and whether the management is a CEO or a dean. In every case, social interchanges go two ways; there is a giver, and a receiver, for the behaviours. Organizational behaviours provoke a response, regardless of the title of the 'underling'. It was Blau (1964) who believed that trust is essential for establishing social relationships in which will facilitate social exchange. Therefore, the value of social exchange depends on sustaining trust-worthy relationships for potential future reciprocal benefits. Many studies argued that people engage in knowledge exchange activities with the expectation of reciprocity (Kankanhalli et al., 2005; Wasko & Faraj, 2000). Social exchange theory suggests that this would be because knowledge exchange activities are part of social interchanges described in SET and its applications.

3.6 Conceptual Framework

This study builds upon the Theory of Planned Behaviour (Ajzen, 1991, 2006) and considers discrete yet comprehensive and integrated factors that determine sharing knowledge among faculty members in HEIs. TPB will be supplemented by factors derived from other theories, including SET, SDT, and prior studies to analyse potential antecedents of knowledge-sharing behaviours among academics. Prior research on knowledge-sharing showed that factors influencing knowledge-sharing behaviour and practices are mainly individual, organizational, and technological factors. The framework will utilize the same classifications and attempt to integrate them as independent factors to identify and examine the factors influencing knowledge-sharing behaviour among academics in HEIs. The factors are empirically tested in the survey, and the overall fit of the three-theory composite is considered in the analysis.

3.7 Research Hypotheses Development of Antecedents

The researcher developed a number of hypotheses to be utilized in examining the proposed TPB framework. The hypotheses that are investigated in the study are presented herein:

H1. Intention to share knowledge between academics will lead to greater actual sharing of knowledge.

H2. There is a significant relationship between academics' perceived behaviour control and actual knowledge-sharing.

H3. Subjective norms have a significant effect on academics' intention to share knowledge.

H4. A more positive attitude towards knowledge-sharing will lead to greater intention of academics to share knowledge.

H5. Interpersonal trust has a significant relationship with academics' intention to knowledge-sharing.

H6. Perceived reciprocal benefits have a significant relationship with attitudes of academics toward knowledge-sharing.

H7. Perceived knowledge self-efficacy has significant relationship with academics' attitude toward knowledge-sharing.

H8. Perceived loss of power has a significant relationship with academics' attitudes towards knowledge-sharing.

H9. An organizational climate characterized by fairness, innovativeness and affiliation has a significant relationship with academics' subjective norm towards sharing knowledge.

H10. HEI Leadership style has a significant relationship with subjective norms of academics towards intention of knowledge-sharing behaviour.

H11. Technology and KM tools have a significant relationship with academics' Perceived Behavioural Control towards knowledge-sharing.

Each of the hypotheses is addressed in turn.

3.7.1 Knowledge-Sharing Behaviour: H1 and H2

According to TPB, behavioural intention has been regarded as essential for examining actual behaviour as a dependent variable (Ajzen, 1991). It is widely established that the primary antecedent to knowledge-sharing behaviour is intention. Ajzen suggests that the higher the intention of a person to perform a behaviour, the higher the rate of performance of the behaviour. Ajzen (1991) describe intentional behaviour as the readiness of someone to engage in knowledge-sharing activity. A considerable number of prior studies have examined the link between behavioural intention and actual behaviour (Bock et al., 2005; Joalee et al., 2014; Ryu et al., 2003; Tohdinia & Mosakhani, 2010). A strong significant causal link was found between physician's intention and actual knowledge-sharing behaviour by Ryu et al., (2003). In a study in Iran, Tohdinia & Mosakhani, (2010) concluded there was a positive relationship between intention and actual knowledge-sharing behaviour. Based on the results of prior studies and according to the TPB, it can be argued that knowledge-sharing intention has significant impact on actual sharing behaviour. The first hypotheses was developed to test this concept.

H1. Intention to share knowledge between academics will lead to greater actual sharing of knowledge.

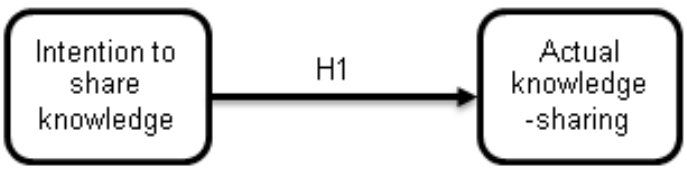

Figure 4. Hypotheses 1.

In developing hypotheses 2, it was acknowledged that Perceived Behaviour Control is established by the TPB model as a determinant of predicting the intention to perform a specific behaviour. Ajzen (1991) describes PBC as the beliefs of the individual on the accessibility or inaccessibility of resources or factors needed to perform, facilitate or hinder a behavioural performance. PBC is the degree of personal control beliefs (barriers) an individual can have over the behaviour in question and how often these barriers occur (control frequency). This construct determines the controllability of an individual either to act or not to act in a specific manner. Normally, the role of PBC collectively with attitude and subjective norms predict intentional behaviour. Jointly with intention, it acts as a co-determinant of the actual behaviour (Ajzen, 1991). Several studies have examined the role of PBC on knowledge-sharing intention and actual behaviour (Ajzen 1991; Chennamaneni et al., 2012; Pavlou & Fygenson, 2006; Ryu et al., 2003; Taylor et al. 1995). Ryu et al. (2003) concluded that the lack of perceived behavioural control might negatively affect knowledge-sharing. In the Ryu et al. study, there was a significant effect of PBC on physicians' knowledge-sharing behaviour.

In a study in the US, Chennamaneni et al. (2012) asserted the positive relationship between PBC and actual knowledge-sharing. In this context, it can be argued that the greater academics' belief that he/she can overcome the barriers of preventing the performance of sharing knowledge, the greater control over the actual behaviour. Hence, this study proposes the following hypothesis.

H2. There is a significant relationship between academics' perceived behaviour control and actual knowledge-sharing.

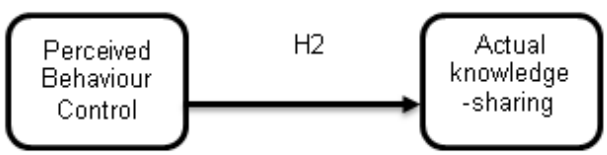

Figure 5. Hypotheses 2.

3.7.2 Knowledge-Sharing Intention: H3 and H4

Subjective norms refer to an individual's perception of the social pressure to perform or not to perform a specific behaviour of interest (Ajzen, 1991). Subjective norms are identified among the decisive factors that can influence intention toward a specific behaviour. Ajzen (1991) argued that subjective norms are important antecedents of human behavioural intention. These norms have a strong positive effect on the intention to perform the behaviour. According to Ajzen & Fishbein (1980), an individual's subjective norms are formed from normative beliefs, which are the perceived social pressures from significant relevant other, or peer groups to perform or not to perform the behaviour at hand. Many studies have examined the role of subjective norms on knowledge-sharing (Bock et al., 2005; Chennamaneni et al., 2012; Goh & Sandhu, 2013; Nordin et al.,2012; Othman & Skaik, 2014; Wasko & Faraj, 2005).

Chennamaneni et al. (2012) found a positive impact of subjective norms on intention to share knowledge. Othman & Skaik (2014) reached similar conclusions, where the subjective norm was found to be a strong predictor of knowledge-sharing intention. Using the TPB model, Ryu et al. (2013) found that subjective norms had the strongest effect on physicians' knowledge-sharing behaviour among the TPB constructs. Significant others in the HEIs context may include the university's senior management, department chairs, program chairs, or peers of the academic. These normative beliefs combined with the individual's motive to comply with these expectations form the subjective norm. Based on the TPB framework and prior research, this study proposes the following hypothesis.

H3. Subjective norms have a significant effect on academics' intention to share knowledge.

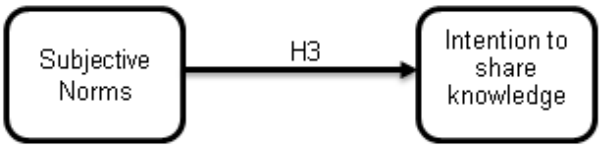

Figure 6. Hypotheses 3.

According to Ajzen & Fischbein (1980), attitudes are set of beliefs and feelings, either positive or negative, toward the intention to perform a behaviour. Therefore, attitude is the degree to which an individual has favourable or unfavourable assessment of the behaviour (Ajzen, 1991). TPB considers attitude as a key determinant affecting the intention to perform a specific behaviour. There were many studies that examined the influence of attitudes on intentional behaviour (Bock & Kim, 2002; Bock et al., 2005; Chennamaneni et al., 2012; Fullwood et al., 2014; Goh & Sandhu, 2013; Hsu & Lin, 2008;). While significant and positive relationships were reported by Chennamaneni et al. (2012) on a study in the US. Hsu & Lin (2008) concluded that attitudes are a strong predictor of intentional knowledge-sharing using a blog system from the World Wide Web. In this context, it can be argued that attitudes towards knowledge-sharing are vital for knowledge-sharing intention. Based on the TPB framework and prior research, this study proposes the following hypothesis.

H4. A more positive attitude towards knowledge-sharing will lead to greater intention of academics to share knowledge.

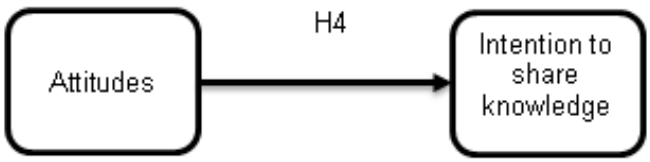

Figure 7. Hypotheses 4.

3.7.3 Interpersonal Trust as Intention towards Knowledge-sharing H5

Some researchers argue that trust is a complex multi facet concept (Hsu et al., 2007). McAllister (1995, p. 25) defined interpersonal trust as the “extent to which a person is confident in and willing to act on the basis of the words, actions, and decisions of another” and theorized interpersonal trust came in two dimensions: cognition-based and affection-based trust.

Cognition-based trust is based on available knowledge, competence, and responsibility of individuals, whereas affection-based trust is based on the emotional bonds between individuals (Casimir et al., 2012). A simplified definition of trust was introduced by Choi et al., (2008, p.745), when trust was defined as a “set of expectations shared by all those in an exchange”. Based on these definitions, trust could be perceived as the combination of motivation and confidence required for establishing a relationship with another person. Therefore, if someone has confidence and motivation to strengthen the relationship with another person, then he/she would share knowledge with those he/she trusts. In this context, Convery, (2011) found trust to be the core for knowledge-sharing activities.

A number of studies have examined the role of interpersonal trust on KS behaviour among employees (Al-Alawi & Al-Maroni, 2007; Casimir et al., 2012; Choi et al., 2008; Kim & Ju, 2008; Kukko, 2013; Siddique, 2012). For example, empirical findings of a study by Al-Alawi & Al-Maroni (2007) showed a positive impact of trust on knowledge-sharing. Siddique (2012) found that a trusting culture must exist in the organization before knowledge-sharing can flourish. Casimir et al. (2012) outlined the facilitator impact of affective based trust (interpersonal trust) and knowledge-sharing behaviour. Lack of trust was named as a key knowledge-sharing barrier in a high technology firm in Finland (Kukko, 2013). On a study of HEIs in Ethiopia, Azalea et al. (2013) reported that trust had the highest impact on academics’ behaviour to share knowledge with other faculty members. It can be argued that trust has a significant impact on determining employees’ intention to engage in knowledge-sharing activities. Based on prior studies, this research proposes the following hypothesis.

H5. Interpersonal trust has a significant relationship with academics' intention to knowledge-sharing.

Figure 8. Hypotheses 5

Figure 9 illustrates the determinants predicted and cited by TPB and prior research to influence actual knowledge-sharing and intention to share knowledge.

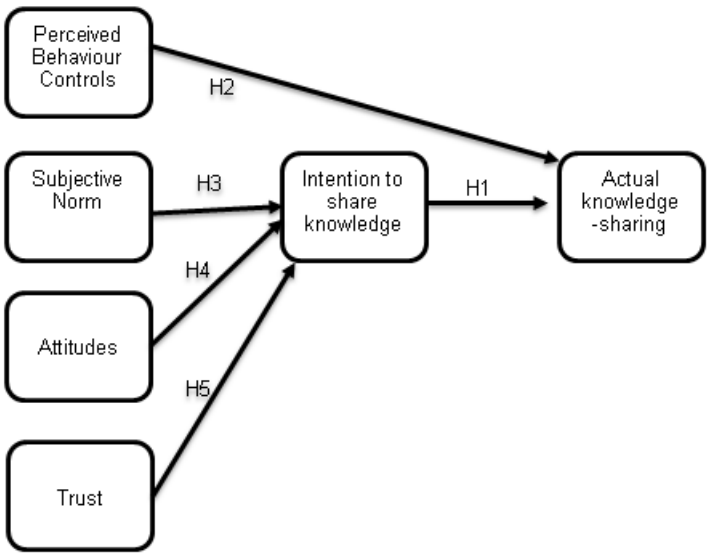

Figure 9. Key Determinants Predicting Academic Knowledge-Sharing

3.7.4 Attitudes towards Knowledge-Sharing: H6, H7, and H8

While KS attitude is represented in the conceptual framework as having direct influence on KS intention, attitudes towards KS are shaped by several beliefs in which they refer to many feelings (positive or negative) toward KS. According to Self Determination Theory (SDT), human motivation and personality is influenced by intrinsic and extrinsic sources of motivations (Deci & Ryan, 1980; Deci & Ryan, 2008). SDT suggests that motivational influences of those beliefs are either self-directed or controlled motivations. Self-directed behaviours are based on choice

made by individuals due to the importance of a specific behaviour to those individuals. This type of motivation is called intrinsic motivation. Deci (1975) describes intrinsic motivations as participating in the activity for its own sake, out of interest or for the satisfactions resulting from the experience. They can be viewed as self-driven goal. Controlled behaviours are performed based on the perceived sense of pressure; these are called extrinsic motivations. An example of self-directed behaviour would be sharing knowledge on one's own volition because the individual finds the process of knowledge-sharing to be stimulating. In contrast, a controlled behaviour of sharing knowledge may be due to management pressure or expectation of an organizational incentive. In such a case, the individual's behaviour is regulated and controlled by extrinsic motivations.

Previous studies have identified several intrinsic motivations including knowledge self-efficacy, enjoyment of helping others, reputation, altruism and loss of knowledge power (Alotaibi et al, 2014; Babalhavaeji & Kermani, 2011; Convery, 2011; Fullwood et al., 2014; Kim and Lee, 2006; Lin, 2007; Ragab & Arisha, 2013; Shanshan, 2013; Suhaimee et al., 2006; Tan & Ramayah, 2014; Wasko & Faraj, 2005). Extrinsic motivators were also discussed and examined, including organizational rewards and reciprocal benefits (Bock et al., 2005; Cabrera et al., 2006; Cheng et al., 2009; Kankanhalli et al., 2005; Kulkarni et al., 2006; Lin, 2007; Shanshan, 2013; Sohail & Daud, 2009; Suhaimee et al., 2006; Susanty & Wood, 2011; Tan & Ramayah, 2014). Due to the emerging trends in higher education characterised by employing more faculties and common university governance, the next section will detail the independent variables selection to achieve the aim and objectives of this research to understand academics knowledge-sharing behaviour at higher education institutions.

Perceived Reciprocal Benefit as Antecedent to Attitudes towards Knowledge-Sharing Among Academics in Higher Education: H6

Social Exchange Theory (Blau, 1967) describes human behaviour in terms of social exchanges. Hence, people would engage in in social exchanges with expectation that their contribution will result in reciprocal returns. Social exchanges differ from economic exchanges in that the value in the exchange behaviour is not distinct. In

line with social exchange theory, prior research suggests that people engage in KS with the expectation that others will answer their upcoming knowledge requests.

There were several studies that examined the influence of reciprocity on attitudes of employees towards knowledge-sharing (Bock et al., 2005; Kankanhalli et al., 2005; Wasko & Faraj, 2005). Reciprocity has been cited as a significant motivator for the disposition to share knowledge in electronic communities of practice study by Wasko and Faraj (2000). Additionally, altruism was found to be a predictor of employees' attitudes to share knowledge in virtual communities (Kuznetsov, 2006). Bock & Kim (2002) reported a positive link between reciprocity and attitudes towards knowledge-sharing. Similarly, Kankanhalli et al., (2005) determined that reciprocity was positively related to the intention of sharing knowledge in their study in electronic communities of practice. Based on the findings of previous research, it can be argued that reciprocity is a predictor that would influence attitudes towards knowledge-sharing. Based on this analysis, H6 was proposed.

H6. Perceived reciprocal benefits have a significant relationship with attitudes of academics toward knowledge-sharing.

Figure 10. Hypotheses 6

Self-Efficacy as Antecedent to Attitudes towards Knowledge-Sharing: H7

Self-efficacy is defined as "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1997, p. 2). Ajzen (2002) describe self-efficacy as the individual's belief or confidence in how ease or difficult it would be to perform a behaviour. Self-efficacy is considered by Ajzen (1991) to be an important factor influencing people's intention to perform a behaviour. Lately, the concept of self-efficacy has been applied to KM and KS to

substantiate personal efficacy belief in KS. Authors have cited knowledge self-efficacy in the case of KS using several views. For example, Luthans (2003) refers to knowledge self-efficacy as an individual's judgment as to whether he or she had knowledge to solve work-related problems. According to Cabrera & Cabrera (2005)," *knowledge efficacy perception refers to the belief a person has regarding the value of his or her knowledge*". Other researchers described self-efficacy in the context of KS as the individual's self-confidence in providing information that is valuable to other members of the organization (Kankanhalli et al., 2005; Lin et al., 2009). Knowledge-sharing self-efficacy particularly was referred to as individual's belief that he or she has information worth sharing and have adequate competence to share it with others (Van Acker et al., 2014).

Based on the self-efficacy concept, in this study, knowledge self-efficacy is described as the "*individual's judgment of his capabilities to contribute to the organizational performance"* (Bock & Kim, 2002). Researchers have found that when workers have high confidence in providing valuable knowledge to the organization are more likely to achieve their tasks and participate in KS activities (Bock & Kim, 2002). Endres et al. (2007) established that individuals' environments contribute to the formulation of self-efficacy, which leads to knowledge-sharing.

According to Kankanhalli et al. (2005), when people believe that their knowledge would improve work activities, processes and productivity, they lean toward sharing knowledge. Prior research showed that employees with high knowledge self-efficacy tend to be intrinsically motivated to share knowledge (Bock & Kim, 2002: Lin, 2007b). Authors have cited self-efficacy to have positive influence on individual's attitudes to share knowledge (Bock & Kim, 2002; Lin, 2007b; Tohidinia & Mosakhani, 2010; Olatokun & Nwafor, 2012; Ye et al., 2006). Consequently, it can be argued that people with a greater knowledge self-efficacy might share their knowledge more than people with lower self-efficacy. Based on this argument and prior studies, H7 was proposed.

H7. Perceived knowledge self-efficacy has significant relationship with academics' attitude toward knowledge-sharing.

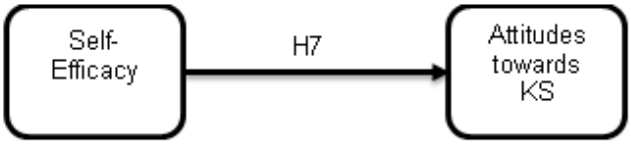

Figure 11. Hypotheses 7

Loss of Knowledge Power as Antecedent to Attitudes towards Knowledge-Sharing: H8

Previous research shows that giving up the knowledge an individual has by sharing it with others would prevent the individual from claiming the benefits associated with that knowledge (Convery, 2011). Hence, employees consider their knowledge as a source of power and they fear losing that power by sharing it with others (Gray, 2001). There were several studies that examined the influence of loss knowledge power on attitudinal position towards sharing knowledge (Bartol et al., 2009; Chennamaneni et al., 2012; Khalil et al., 2014). Chennamaneni et al., (2012) studied the influence of psychosocial determinants mirrored by loss of knowledge power on knowledge-sharing behaviour among knowledge workers. They revealed negative relationship between loss of knowledge power and attitudes towards knowledge-sharing.

Similar findings reported by Khalil et al., (2014) on a study in Jordan. Apprehension of losing job security and value in the organization due to knowledge-sharing was identified by Riege (2005) as an individual barrier to knowledge-sharing culture. In this context, it can be argued that people would feel their employment or value in the organization would be threatened if the shared their hard-earned knowledge. Based on this argument and prior studies, H8 was proposed.

H8. Perceived loss of power has a significant relationship with academics' attitudes towards knowledge-sharing.

Figure 12. Hypotheses 8

Figure 13 summarizes the proposed antecedents of attitudes towards knowledge-sharing among academics in HEIs.

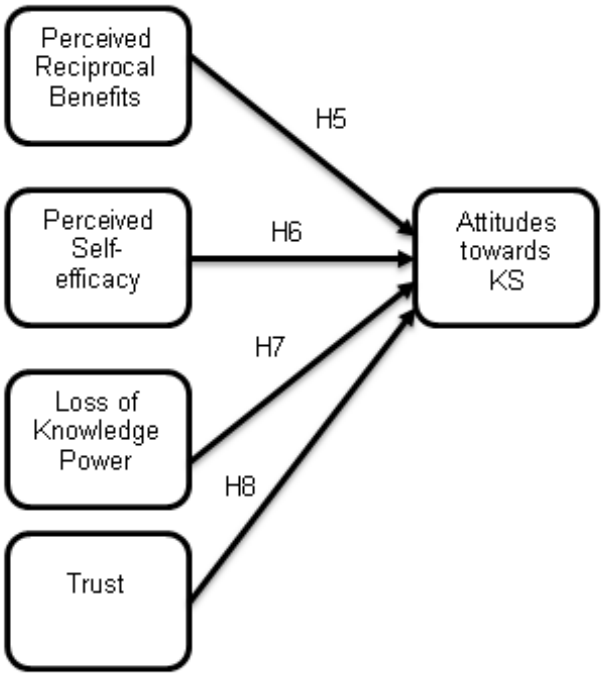

Figure 13. Summary of Antecedents of Attitudes towards KS

3.7.5 Subjective Norms: H9 and H10

Subjective Norms are explained as the different social pressures to perform or not to perform certain behaviour (Ajzen, 1991). According to Ajzen (2002), an individual can form a belief based on what other people (important others) expect us to do or based on the observation on the action of the important others. In other words, an individual may have favourable attitudes on certain actions, but if people important to them pressure them not to do it, they will then develop negative attitude towards the behaviour (Fishbein & Ajzen, 2010). Norms are perceived and accepted, and as time passes, the norms will form rules on how the individual behaves. Subjective

norms refer to the views of others and they think of the behaviour in question (Ayalew et al., 2013). In an organizational setting, an employee's behaviour is greatly influenced by perceived behaviours, atmosphere, and work environment (Sveiby, 2007).

In the context of knowledge-sharing, subjective norms refer to someone's belief of whether colleagues, supervisors and management support, endorse or encourage sharing knowledge with others or not (Chennamaneni et al., 2012). Subjective norms have received widespread empirical validation studies of impact on knowledge-sharing intention (Abzari & Abbasi, 2011; Bock et al., 2005; Cabrera et al. 2006; Chennamaneni et al., 2012; Goh & Sandhu, 2011; Jolaee et al., 2014; Ryu et al., 2003). Abzari and Abbasi (2011) have applied the TPB model to examine knowledge-sharing behaviour of on employees of an Iranian university. The researchers indicated that subjective norms had a substantial impact on an employee's intention to share knowledge.

Utilizing a decomposed TPB model, Chennamaneni et al. (2012) suggested that subjective norms were second to attitude and before perceived behavioural control in influencing knowledge-sharing intention. Goh & Sandhu (2011) established that subjective norms were a key predictor of knowledge-sharing intention by academics. Despite wide empirical evidence of positive role of subjective norms on intention to perform the behaviour, Zhang & Ng (2012) found that knowledge-sharing intention is only weakly influenced by employee's subjective norm in construction companies in Korea.

Organizational Climate as Antecedent to Subjective Norms towards Knowledge-Sharing Among Academics in HEIs: H9

Organizational climate elements are similar to organizational culture, but take a rather different view. Organization culture has been described in the literature as 'the way we do things around here'. This assertion is both complex and hard to rationalize (Abzari & Abbasi, 2011). The antecedent of 'The way we do things around here' is the result of diverse and complex factors (Abzari & Abbasi, 2011). In this context, organizational climate describes characteristics of an organization from the perspective of the individual employee (Schein, 1985). Organizational

climate refers to the perceptions and feelings of employees regarding their work environment. Chennamaneni et al. (2012) described organizational climate as shared myths, values, norms, beliefs, meanings, and assumptions that can be found in an organization. The climate is essentially the organizational culture. The climate or culture provides employees with and understanding of what are acceptable and desired behaviours in the organization. It is believed that subjective norms are shaped when employees assume and evaluate these values and norms.

The effects of organizational climate on KS have been broadly studied (Abzari & Abbasi, 2011; Bock et al., 2005; Connelly & Kelloway, 2003; Khalil et al., 2014Lin & Lee, 2006; Luo, 2009). The general agreement among these studies is that different aspects of organization climate were examined as critical determinants of knowledge-sharing. For example, Bock et al. (2005) identified fairness, innovativeness, and affiliation as characters of organization climate that determines an individual's subjective norms toward the intention of knowledge-sharing. Fairness is the employee's perception that organizational practices are just. Fairness encourages individuals to share knowledge. Innovativeness is an individual's prescription that creativity and innovations are valued by the organisation; hence, this would motive employees to share knowledge particularly of a creative or innovative nature.

Affiliation on the other hand, provides a sense of togetherness to employees and stimulates them to help each other. Khalil et al. (2014) argued that affiliation was a significant predictor of organizational climate toward knowledge-sharing intention. Additionally, Abzari & Abbasi (2011) argued that organizational climate had a positive effect on subjective norms towards the intention of knowledge-sharing of staff in an Iranian University of Esfhan. Using TRA, Luo (2009) showed that academic subjective norms towards the intention of knowledge-sharing were positively influenced by academic team climates symbolised by affiliation and fairness. Thus, it can be argued that organizational climate would influence employee's subjective norms towards sharing knowledge. In this context, and based on the prior results, this research proposes the H9 hypotheses was developed.

H9. An organizational climate characterised by fairness, innovativeness and affiliation has a significant relationship with academics' subjective norm towards sharing knowledge.

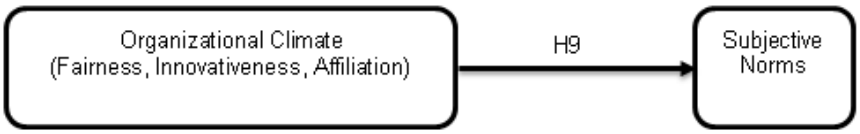

Figure 14. Hypotheses 9.

Leadership as Antecedent to Subjective Norms towards Knowledge-Sharing: H10

A large number of studies exist on the topic of leadership. Several researchers have found that leadership behaviours are an important factor of organizational success (Bass, 1990; Ulrich et al., 1999). Leadership in this context was defined as being able to influence others to convince them to willingly follow the goals of the leader (Dessler, 2001). Banutu-Gomez (2013) indicated that leadership influences the relationships between leaders and followers with an aim to accomplish shared goals. According to Yukl (2002), much of the research on leadership focuses on leadership traits, behaviours, power, and influence.

Prior research identified two key types of leaderships, transformational and transactional. Both types of leaderships were considered relatively new, since they were based on recent theorists. They were based on the work of Bass (1985) and the original work of Burns (1978). Transactional and transformational leadership approaches have been adopted for this study.

Transformational leadership is a distinct form of leadership distinguished by the leader's influence on followers whom they trust, admire, and respect. This form of leadership manifests by the follower's readiness to do more than they initially expected (Ykul, 1999). In addition, transformational leaders can bring about pronounced change in an organization. These leaders are able to generate higher creativity, productivity, exceeding expectations and efforts (Bass, 1995). Transformational leaders are known to transform organizational culture focusing on

long-term objectives rather than short term ones (Avolio & Bass, 1988). Transactional leadership, on the other hand, involves some kind of exchange between leaders, co-workers and the followers (Bass & Avolio, 1994). Workers and managers reach agreements of what followers will receive for achieving the negotiated performance level (Howell & Avolio, 1993). Due to the role leadership plays, leaders have an enormous impact on KS practices within an organization (Politis, 2002). They create the circumstances and even culture necessary to promote KS culture. Significantly, Politis (2002) points out that the role of leadership is increasingly changing from knowledge gatekeeper, in which knowledge is protected from dissemination, to knowledge creation and knowledge-sharing for all employees.

In the context of higher education institutions, two types of leadership were identified by Yielder and Codling (2004). Academic leadership and managerial leadership are distinct types. Managerial leadership is concerned with job titles, authority and controls as well as administrative supervision. These roles are normally assigned to the position of manager, not necessarily to the person. In contrast, academic leadership is characterised by professional recognition, expertise, and academic team acceptance. The power base is a personal one and is based in academic knowledge. From the KS perspective, leadership comes from two theoretical bases characterised by style and self-management theories (Von Krogh et al., 2012). Style theory signifies the manager's style and management attitude. The manager-leader may be an innovator, mentor, or facilitator.

These styles are indicative of what leaders do and their role in the organization (Yang, 2007; Von Krogh et al., 2012). Yang (2007) suggested that leaders with stringent policies would generally not support KS behaviours among employees. Innovator and facilitators, however, would highly promote a climate of knowledge-sharing among workers. Other leadership theories discussed in the literature included strategic leadership, role modelling, and leading by example (Von Krogh et al., 2012). Existing studies underlined the positive role of leadership in all aspects of the knowledge cycle. For example, Politis (2002) suggested a positive relationship between transformational leadership and follower's knowledge-sharing.

Behery (2008) found that transactional and transformational leadership style would positively affect knowledge-sharing.

Connelly & Kelloway (2003) confirmed that employees' perceptions of management support characterised by leadership had a positive impact on knowledge-sharing culture among MBA students at four Canadian universities. Al Husseini and Elbeltagi (2013) showed that transformational leaders could stimulate the transfer of tacit and explicit knowledge between employees. Similarly, Lakshman (2007) argued that leaders play a pivotal role in the success of KM projects, which in return have positive impact on organizational performance. Leaders played a major role on promoting knowledge-sharing behaviour among team members in projects (Srivastava et al., 2006). It can be argued that leadership style plays a critical role in influencing the subjective norms of workers towards knowledge-sharing. Based on the results of prior research and there is a call for further understanding of the influence of leadership style on knowledge-sharing in a wider academic context (Chatzoglou & Vraimaki, 2009; Chennamaneni et al., 2012). In this context, and based on the prior results, this research proposes the H10 hypotheses was developed.

H10. HEIs Leadership style has a significant relationship with subjective norms of academics towards intention of knowledge-sharing behaviour.

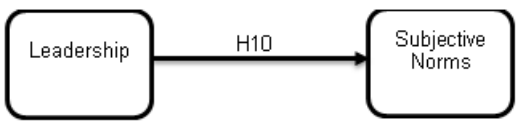

Figure 15. Hypotheses 10.

3.7.6 Knowledge-Sharing Perceived Behaviour Control (PBC): H11

PBC was introduced as an extension to the original Theory of Reasoned Action (TRA) constructs to remedy the issue of unavailability of volitional control over the intention to perform a behaviour (Ajzen, 1985). PBC indicates the perceived belief of easiness or difficulties of performing the behaviour and the availability of the resources needed to facilitate that behaviour (Ajzen, 1991). According to Ajzen (1991), an individual's behaviour is directed by control beliefs about factors that can either aid or discourage performance of the behaviour. Thus, TPB assumes that PBC has motivational impact on any behavioural intention and actual knowledge-sharing behaviour. For example, in the activity of purchasing, the purchaser would need resources to commit to actually buying an item. The purchaser would need time, knowledge about the product, confidence, and other factors. There were several studies that have examined the relationship between PBC knowledge-sharing among individuals (Abzari & Abbasi, 2011; Ayalew et al., 2013; Chennamaneni et al., 2012; Jeon et al., 2011; Nordin et al., 2012Khalil et al., 2014). The common double consensus among those researchers revealed a positive relationship between PBC and the intention to share knowledge and actual the actual sharing of knowledge among employees in commercial sectors.

Many researchers have examined the role of information and communication technologies on PBC of workers (Bock et al., 2005; Khalil et al., 2014; Kukko, 2013; Riege, 2005; Wang & Noe, 2010). The large number of papers reviewed described the interest expressed by organizations to procure and invest in IT infrastructure in both the public and private sector. This investment is realized by the forms knowledge based systems, communities of practice and Knowledge Management Systems (KMS) (Abdullah & Selamat, 2007; Chennamaneni et al., 2012; Wang & Noe, 2010). Technology and KM tools are a key PBC predictor.

Due to the escalation of information technology's role in facilitating sharing and management of knowledge, range of technology interfaces for knowledge exchange are now available. Many researchers believe that the support of information and communication technology is fundamental for KM and a key enabler of knowledge-sharing. Convery, (2011) suggested that spread of low-cost computers and networks have created the right medium to manage and share knowledge easier

and faster. Nevertheless, they cautioned that information technology does not guarantee knowledge creation or even promote sharing it if the organizational culture does not favour these activities. According to Leidner, Alavi, & Kayworth, (2010), information and communication technology support KM and knowledge-sharing in sundry ways. Examples include finding an expert or resource using online directories or databases. Although Riege (2005) acknowledged the important role of IT in enabling sharing of knowledge, he questioned the expectations placed on technology in absence of what technology should do, can do, or cannot do.

Hislop (2013) listed the characteristics of several IT and communication forms used for sharing knowledge. He noted that each of these mediums has distinctive richness dependent on social cues. For example, face-to-face communication would be information rich since it involves many social cues, body language, and feedback. Telephone forms of sharing on the other hand would not have the body language cues of the face-to-face method. Hislop (2013) suggest that email is the lowest form of communication in information richness and should be used more of codified knowledge.

Chennamaneni et al. (2012) argued that user friendly, well-designed technology and fit-for-purpose tools encourage a collaborative environment, promoting knowledge-sharing behaviour and reducing time needed for sharing. Drawing upon this debate, past studies suggests that that people use IT resources for sharing knowledge according to their values about the convenience of use of such systems. (Chennamaneni et al., 2012; Ciganek et al., 2008; Lin, 2007d). Despite the number of studies examining the role of ICT on knowledge-sharing in commercial sector, there are very limited studies involving the higher education sector. In this context, and based on the prior results, this research proposes the H11 hypotheses was developed.

H11. Technology and KM tools have a significant relationship with academics' Perceived Behavioural Control towards knowledge-sharing.

Figure 16. Hypotheses 11.

3.8 The Research Conceptual Framework

This study builds upon the Theory of Planned Behaviour (Ajzen, 1991) and considers discrete factors that determine sharing knowledge among faculty members in HEIs. TPB was supplemented by factors from Social Exchange Theory and Self Determination Theory to analyse possible antecedents of knowledge-sharing behaviours among academics. Prior research on knowledge-sharing showed that factors influencing knowledge-sharing behaviour and practices are mainly categorized as individual, organisational, or technological factors. As a result, the proposed framework will utilize similar classification to identify and examine factors influencing knowledge-sharing behaviour among faculty members. Figure 17, on the final page of the chapter, presents the research framework for this study.

3.9 Chapter Summary

This chapter has provided the research need and the significance of undertaking this study. The theoretical background, which underpins the conceptual framework, was presented. The selection of the Theory and Planned Behaviour (TPB) as the main theoretical lens used for this study was justified. Supporting theories were discussed and justified as well. Based on the theoretical background section, a conceptual framework with eleven hypotheses was presented as a result. All hypotheses were supported from TPB and prior studies accordingly. Figure 17 illustrates the research framework that guides the study and that was presented in this chapter.

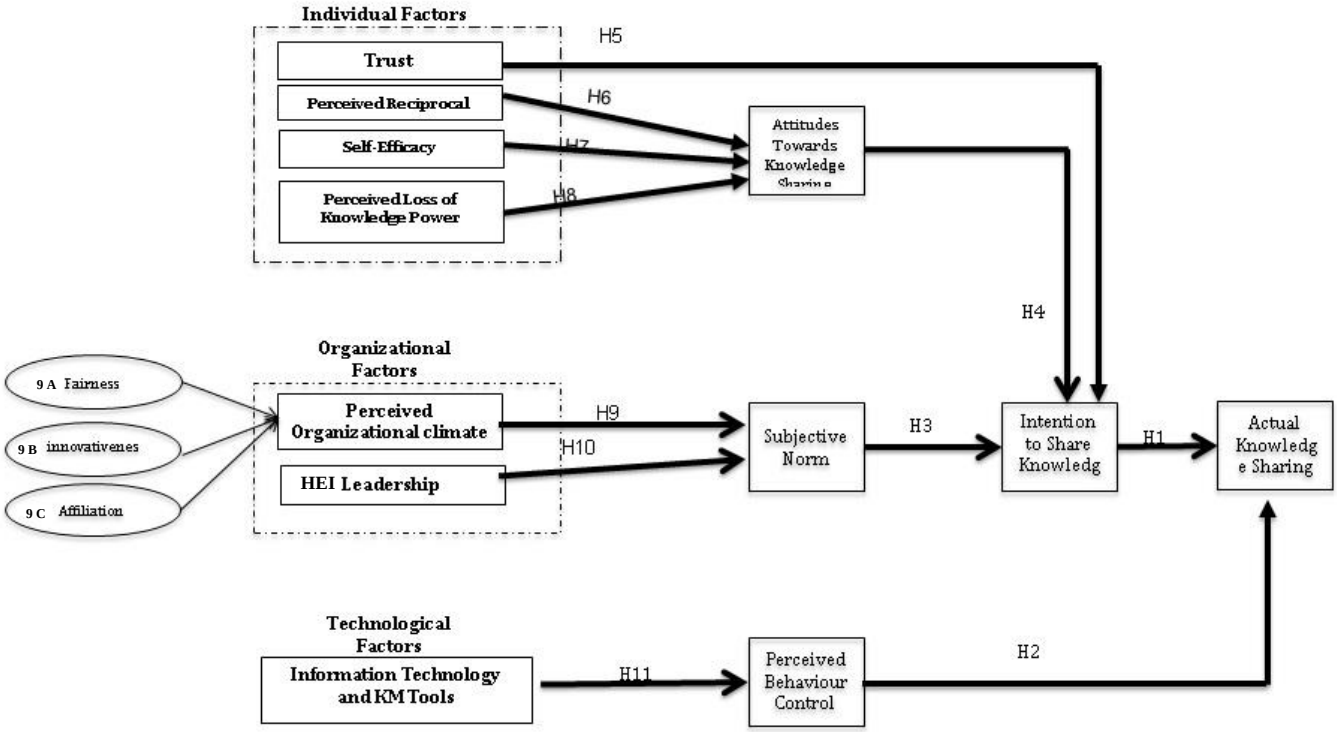

Figure 17. Research Framework

The next chapter will present and discuss relevant methodologies utilised in the study.

4.0 CHAPTER FOUR – METHODOLOGY

4.1 Introduction

In the preceding chapter, the conceptual framework for examining the antecedents that would affect academics' knowledge-sharing in HEIs was introduced. The suggested theoretical framework identified 11 relationships among 12 elements and developed 11 hypotheses. Four constructs represent TPB behaviour determinants, and seven antecedents are thought to predict KS among academics. Chapter 4 investigates research strategies that may be useful in confirming the proposed model. It provides a detailed plan of how to carry out the research to obtain valid results. Chapter 4 highlights different research methods and techniques, and justifies the methods and techniques used to perform the study. Chapter 4 begins by discussing broad philosophical techniques in academic research and then concentrating on the explanation and selection of positivist approach. The research design section then looks at the relationships within the research model. Issues regarding the questionnaire, sampling strategies and techniques are then discussed. Finally, ethical issues are considered.

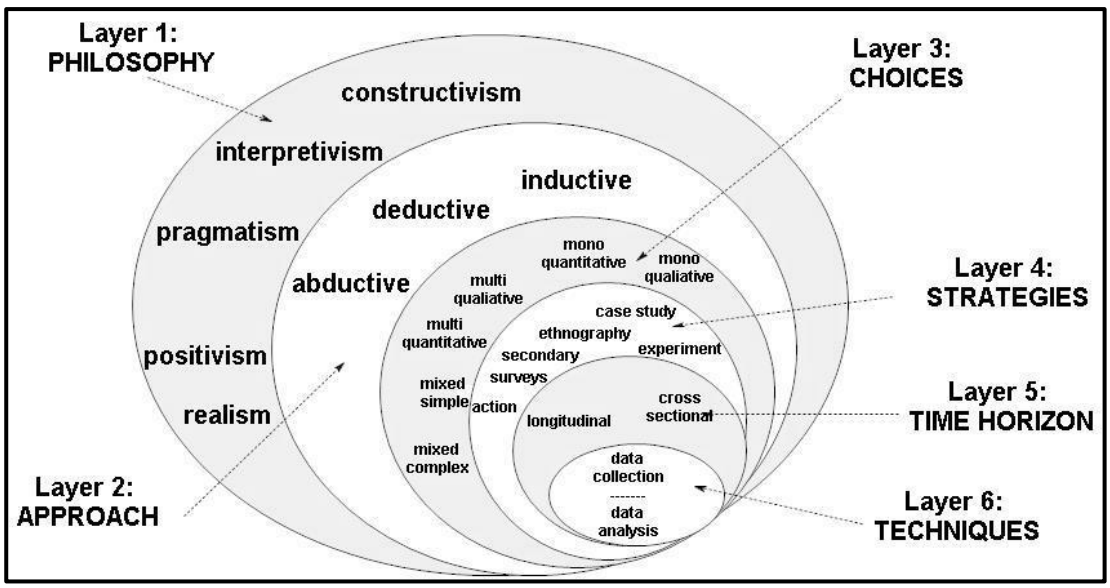

Figure 18. Research Onion. (Adapted from Saunders et al., 2016, p. 124).

Saunders et al. (2016) refer to research as being similar to peeling the layers of an onion. In order to reach the core, one must first examine the layers. In the research

onion, each layer establishes another necessary layer of investigation until the core, the data collection, is established. By using this method to define the entire ‘onion,’ the entire research project can be developed in a consistent manner.

In the onion, shown in figure 18, the philosophy, approach, methodological approach, strategy, time frame, and data collection methods for the research are defined. Each of the layers is discussed in this chapter, as part of the overall research plan.

4.2 Philosophy

According to Mertens (2014), most research enquiries whether quantitative or qualitative are based on assumptions that represent the credibility and stability of the study. Philosophical presumptions create a basis for any academic research, which impacts the characteristics of proposed framework and impacts how the model would answer the study questions. According to Saunders et al. (2016), all research philosophies make ontological, epistemological, and axiological assumptions. Ontology is the assumptions researchers make about the nature of the world. Depending on the ontological assumptions made by the researcher, the research objects may be approached differently. The epistemology is the assumptions the researcher makes about knowledge. Epistemological assumptions help form the contributions to the body of knowledge that the researchers will be able to make. Finally, axiology is the set of values and ethics used by the researcher. The axiological approach deals with the way the researchers allow their own values to affect the research, as well as how the values of the participants are allowed to affect the research (Saunders et al., 2016).

The actual research philosophies are classified based on where they occur if one considers a continuum between objectivism and subjectivism (Saunders et al., 2016). The objective reality reflects the study of natural science and suggests that there is one real, quantifiable truth. Subjective reality, or subjectivism, reflects the study of natural sciences and humanities and suggests that there is no one real truth; the truth is relative to the perspective of the people involved in, and interpreting, that truth (Saunders et al., 2016).

There are a number of epistemologies can be utilized for academic research; they are classified in the literature as positivist, realist, interpretivist, post positivist, and pragmatic (Bryman & Bell, 2011; Dieronitou, 2014). The post-positivist approach has fallen out of favour with researchers and is thus not considered for use in this research. In general, positivists assume that reality (knowledge) is specified objectively and is defined by specific and quantifiable measures (Collis & Hussey, 2014). Interpretivists suggest that research based on the assumption that social reality (knowledge) is in the human mind and it is subjective (Saunders et al., 2012). In contrast, critical researchers focus on “oppositions, conflict, and contradictions in contemporary society” (Myers and Avison, 2002, p. 7). The following section will offer further description for all four philosophies and their relation to the present research.

4.2.1 Interpretivism

Interpretivist philosophy allows the researcher to interpret the information that is acquired during the research process. Because the interpretation typically involves thinking and feeling, it is regarded as a qualitative method (Saunders et al., 2016). This philosophy is very labour intensive to apply. In general, it is utilized with a small population and the issues at hand are explored in depth with an emphasis on how the subject[s] think and feel. Human studies or studies that relate to meaning of the human existence are well suited to interpretivist studies. The researcher seeks to operate from a position of empathy in order to understand what the subjects are feeling and to be able to pass along those understandings (Saunders et al., 2009). In the interpretivist view, conclusions are drawn from real world actions. As a result, these types of studies are considered a natural environment study. The meaning acquired from the research is what is important, particularly the meaning the subjects give to their own actions. This type of study is particularly well suited to small groups of people in a social setting or in the study of social phenomena (Saunders & Tosey, 2012).

4.2.2 Positivism

Positivism is typically used when a researcher wishes to test hypotheses. Positivist viewpoint suggests that observation of a situation can be used to predict future

outcomes. Positivist studies are typically quantitative (Saunders et al., 2009). In general, the positivist study will require statistical analysis in the proof of hypotheses (Saunders & Tosey, 2012); accordingly, the research statements or questions will be in the form of testable hypotheses. The results are quantifiable. This methodology is typically used when the goal is to determine facts, especially when the meaning behind the facts is subservient to the facts themselves (Saunders et al., 2016).

Knowledge is typically reached through the gathering of facts that provide foundation for rules (Bryman & Bell, 2011). Positivists believe that reality is assumed objectively and is described by quantifiable measures and is autonomous of the researcher's tools (Collis & Hussey, 2014). In another word, positivists believe that scientific research evolve around what we can see and measure. Orlikowski & Baroudi (1991, p. 4) argued that positivist studies are "premised on the existence of a priori fixed relationships within phenomena which are typically investigated with structured instrumentation".

4.2.3 Realism

Realism suggests that there is only one truth and it is the researcher's job to discover that truth. The truth may not be easy to discern, and it may be complex. Saunders et al. (2009, p. 114) stated that in a realistic perspective, "objects have an existence independent of the human mind." This philosophy is generally quantitative and requires the use of scientific methodology. The surroundings or study and the researcher are independent of each other; they can maintain independence so research is not biased. The realistic perspective suggests that research is never completely finished, because reality changes as time changes. This methodology is associated with quantitative study and is typically proven or disproven through the use of experimentation (Saunders et al., 2016).

4.2.4 Pragmatism

The pragmatic approach to research is a very practical one. It holds that "no single viewpoint can ever give the entire picture and that there may be multiple realities" (Saunders & Tosey, 2012, p. 3). As a result, Saunders et al. (2016) emphasize that all research findings require interpretation. This approach to research is very

flexible, and is typically associated with qualitative research. Because pragmatism allows a variety of approaches that can be used in the determination of solutions to problems or to explaining phenomena, it is a practical philosophy. In particular, this approach to research is used if the role of social actors in a situation is being studied (Saunders et al., 2016). This approach is frequently used when the role of social actors is in question. The pragmatic approach allows the research to look at the information that has been gathered and interpret it to solve problems and in particular has been used in recent research relating to the use of body cameras on police (Saunders et al., 2016).

4.2.5 Selection of Positivist Philosophy with Pragmatic Overtones

Since positivists believe that a social phenomenon is quantifiable, it has been associated to with quantitative data analysis approaches (Collis & Hussey, 2014). The current research is investigating the determinants and antecedents of academics' attitudes, subjective norms and perceived behaviour control and their influence on knowledge-sharing behaviour. To do so, the current study has developed a theoretical model with 11 measurable hypotheses based on past studies. A positivist approach is thus a suitable philosophy in performing enquiries, as the primary focus of this study is to test the proposed KS behaviour framework and its efficacy in influencing academic's knowledge-sharing behaviours. This choice places the research on the objectivist end of the objective-subjective continuum.

The goal of research is not to apply rules dogmatically. Creswell (2013) has pointed out that the research and the way it is conducted needs to fit the goals of the research. Researchers who seek practical results must utilize practical philosophies in interpretation of the results. There is no one single answer in most research, and in research that addresses business and social issues such as this research. Thus, while a positivist approach can be used to test frameworks proposed in the study, the reality is that there are, indeed, multiple realities and perceptions. As a result, the pragmatic approach is also used to acquire a holistic perception of research process. In a university setting, social actors are important, for many of the reasons discussed. Thus, the philosophy is a blended solution of pragmatic and positivist approaches.

4.3 Research Approach

According to Fink, Thompson, and Bonnes (2006), good practice comes from sound research. Once data is collected, it must be correlated and organized in such a way that it can be used to interpret and analyse phenomena. In general, there are three approaches to this interpretation and analysis: induction, deduction, and abduction. Figure 19 illustrates the three approaches. Inductive reasoning or investigation takes facts and builds theory. Deductive reasoning takes theory or hypotheses and determines whether or not the facts are correct. Abductive reasoning uses facts to build theory, and then takes the theory or hypotheses and determines whether or not the facts and hypotheses are correct (Saunders et al., 2016).

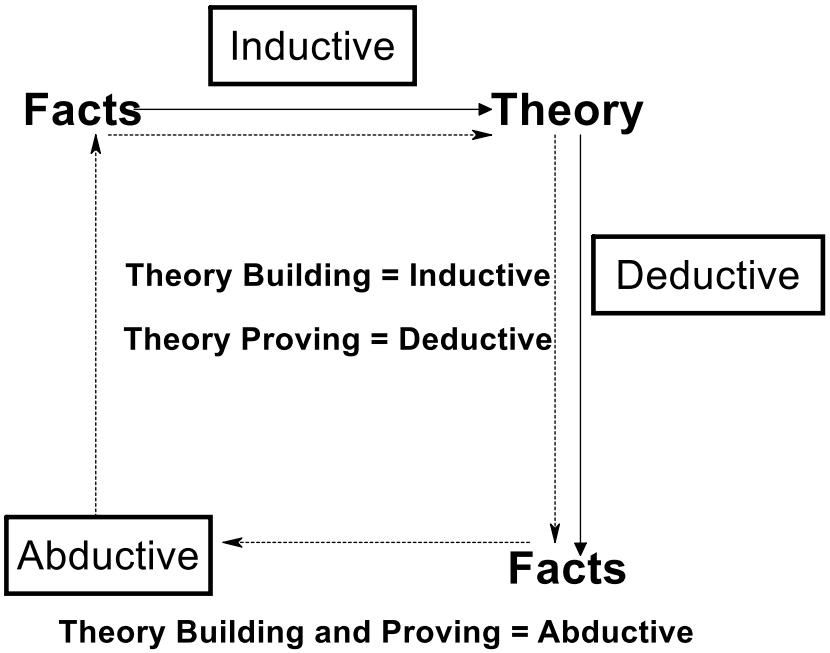

Figure 19. Three Research Approaches.

4.3.1 Induction

Schutt (2015), an inductive approach is used to investigate what has happened. Once the researcher understands what happened, those details are utilized to develop new theory. Associated with the qualitative approach, inductive reasoning goes from facts to theory development.

4.3.2 Deduction

Deductive approaches are used to prove whether or not theories are correct (Saunders et al., 2009). The deductive approach goes from theory to facts. The deductive approach is associated with a quantitative investigation. According to Bryman and Bell (2014), deductive strategy begins with a theory, proceeds to research hypotheses development, and is subsequently used to justify accepting or rejecting the propositions.

4.3.3 Abduction

The abductive approach is a flexible approach that allows the researcher to move back and forth between the perspectives and to utilize both perspectives in reaching a conclusion. If the researcher is not clear what has happened or what is important, then abduction is a useful approach (Reichertz, 2009). The abductive approach is associated with a mixed methodological approach to the research.

4.3.4 Selection of the Abductive Approach

The abductive approach was selected for the research as the goal of the research is bifurcated: theory is proposed and confirmed, but what has happened is also investigated. The deductive approach fits well with the positivist philosophy and an objectivist position. One of the chief benefits of the deductive approach in this particular research is the deductive testing of hypotheses can be used to both prove and falsify hypothesis. If the hypotheses is falsified, examination of the reasons allows for refinement of that falsified hypotheses to be used in further research (Shanks, 2002). The abductive approach also accommodates the investigation of how and why things occur, in a pragmatic approach to the research. The ability to combine the inductive and deductive approaches in an abductive position offers a significant advantage. This advantage is substantial in a field such as this one, which is lacking empirical research evidence.

4.4 Methodological Approach

Research was once defined as either qualitative (relating to feelings and textual analysis) or quantitative (relating to numerical or statistical analysis). Today,

research is typically defined as mono-qualitative or mono-quantitative, as multi-qualitative or multi-quantitative, or mixed simple or mixed complex methodologies (Saunders et al., 2016). Each of the types stems from the basic qualitative and quantitative methodologies, but the term ‘mono’ signifies that only one technique within the methodology is used. The use of the word ‘multi’ signifies that more than one technique within the methodology is used. Finally, the use of the term ‘mixed’ signifies that the researcher has chosen to mix qualitative and quantitative methodologies (Saunders & Tosey, 2012). A mixed simple design reflects using a mix of qualitative and quantitative techniques but analysing each methodology with a corresponding technique. For example, the researcher might interview staff members and analyse the results using qualitative techniques, and follow it with a survey, analysed using quantitative techniques. If the researcher chose to use statistical techniques to analyse the number of times particular phrases occurred in the interviews and chose to use the survey to determine how someone expresses emotion, then the methodology would be mixed complex (Saunders & Tosey, 2012).

A discussion of the basics of qualitative and quantitative methodology follows. The selection for this research is defined as well.

4.4.1 Qualitative

Creswell (2013) described qualitative research as the understanding and the learning of individuals or groups regarding specific societal or human issue. Qualitative research involves inductive methodology where a theory is a consequence of the study (Collis & Hussey, 2014). Therefore, it can be argued that the qualitative approach is based in the interpretative philosophy of social research. Collis & Hussey (2014) suggested that qualitative types of examinations are inclined to be based on acknowledgement of the importance of the subjectivity and different experience levels of humans. Qualitative researchers can pick from many approaches to research, including narrative research, case studies and grounded theory (Saunders et al., 2016). According to Creswell and Poth (2017), the main objective of qualitative research is to understand how people understand and interpret the world around them in relation to a specific issue or phenomena.

4.4.2 Quantitative

Quantitative research is described as a method for testing hypotheses by inspecting the relationship among factors (Creswell, 2013). Quantitative inquiry also underlines the quantifiable features during data collection and analysis (Bryman & Bell, 2014). Collis and Hussey (2014) have suggested that quantitative methods involve the deductive approach where an existing or developed theory would guide the study. In such methods, the investigator begins with the existing theory, which leads to the development of research propositions, followed by data collection and findings. The last step either discards or approves the hypotheses (Bryman & Bell, 2014). Based on the previous discourse, it can be argued that quantitative approaches lend itself to positivism in research philosophy (Saunders et al., 2016). Some of the common features of quantitative studies are the use of surveys and experimental approaches (Collis & Hussey, 2014).

Creswell (2013) also suggested that surveys and experimental approaches are quantitative in nature. Medical research frequently utilizes quantitative methodology. According to Bryman and Bell (2014), the key objectives of the quantitative researcher are discovering explanations and being able to generalise their findings to more than that particular sample group. It is believed that precision and control are key features in quantitative approach. While it can be argued that control is realised within the sampling and design, precision is achieved by reliable quantitative measurements. Opponents of quantitative research argue that it reduces the ability to think and disregards human individuality by emphasising scientific quantifiable measures (Massey, 2003). In the current study, the quantitative approach is characterised using survey questionnaires to collect data from academics to validate the research framework proposed in figure 17.

4.4.3 Selection of Quantitative Approach

There is a strong dissimilarity between qualitative and quantitative research in terms of philosophical assumptions, strategies, methods, objectives of the researcher and the types of research problems. These dissimilarities are illustrated in table 5.

Table 5. Strategies of Quantitative and Qualitative Approaches

Criteria	Quantitative Approach	Qualitative Approach
Philosophical assumptions	Post positivist knowledge claim.	Constructivist knowledge claim
Strategies	Surveys, experiments	Phenomenology, grounded theory, case studies and narrative
Methods	Closed-ended questions, predetermined approach, numeric data.	Open-ended questions, text or image data, observations, interviews
Practices of researchers	▪ Test to verify theories ▪ Identify variables to study ▪ Observe or measure variables numerically ▪ Employ statistical procedures.	▪ Self-position ▪ Gather experiences from interviewees ▪ Emphases on one issue ▪ Make interpretation of the data ▪ Collaborate with participants ▪ Create an agenda for change or reform
Research problems	▪ Identifying factors ▪ Understanding the best predictors of an outcome ▪ Verifying a theory in specific context	▪ Understanding the concept of phenomena ▪ Exploring unknown variables ▪ Researching new topics

Source: Adapted from Creswell (2013)

The present study has chosen a quantitative research strategy as it follows a deductive approach. The research empirically examines 11 hypotheses to determine whether they are accepted or excluded. The potential to gain substantial size of sample also exists. This study follows a research philosophy that is positivist, it investigates the developed conceptual framework for understanding the influence of KS in HEIs context. Moreover, this study employs the theory of Planned Behaviour (TPB) (Ajzen, 1991) to enable the development of theoretical model and hypotheses formation and testing. Wang & Noe (2010) found that some KS quantitative studies failed to measure actual knowledge-sharing objectively by combining the use of knowledge and sharing. Therefore, a measure of objectivity could help define the factors in knowledge-sharing using quantitative approach.

Qualitative measures can be time consuming. For example, becoming immersed in one or more university department to understand its culture and values was considered impractical given the time and resources allocated for this study. The

time was too limited to become ‘immersed’. However, it was possible to ask several respondents about their perceptions on these topics in the survey. Moreover, since this study attempts to explore the influence of knowledge-sharing factors in HEIs, it is neither feasible nor practical for the researcher to employ large-scale interviews or large case studies as it is a time consuming and costly exercise with little value added for the aim and objectives of this research.

4.5 Strategies

A research strategy is as a basic plan of how well the research questions will be answered by the researcher. The strategy links the selected research philosophy and subsequent choice of approaches to data collection and analysis (Saunders et al., 2016). The literature reflects that there are a number of research strategies that can be utilized. Saunders et al (2016) points out that strategies can include case studies, grounded theory, experiments, ethnography, action research, secondary research, and surveys. Collis and Hussey (2014) suggested surveys are closely linked to quantitative research. As stated earlier, the researcher has chosen quantitative approach, embodied in the survey strategy. The procedure utilized for the survey will be discussed at length in later sections.

4.6 Time Horizons

Time horizons can be long term (longitudinal) or a slice of time (cross sectional). Longitudinal studies follow a population over a long period of time, while cross sectional studies investigate a population during a slice of time (Saunders et al., 2016). Longitudinal studies can take place over many years and thus are outside of the scope of this research. A cross sectional time horizon was selected for this study.

4.7 Data Collection and Analysis

The data collection methods and analysis resemble the research strategies. Once the strategy has been chosen, the methods of collecting the data are established and the analysis process is described. The survey was chosen as the first strategy. This section details the sample size, how the survey was conducted, the use of a

pilot survey, and the steps used to analyse the results. It also contains a discussion of the qualitative approach utilized in the study.

4.7.1 Selection of Surveys

Collis and Hussey (2014) suggested that the key aim of surveys is to gather data from selected people, groups, or a sample to analyse data and then generalize it to a larger population. Surveys are considered to be cost-effective for collecting large amount of data from a significant population size (Saunders et al., 2016). Surveys are generally linked to deductive strategy which begins with a theory, development of research propositions, and subsequently accepting or rejecting the hypotheses (Bryman & Bell, 2014). Collis and Hussey (2014) argued that surveys lend themselves to positivist research philosophy. Numerous data collection techniques can be used for survey taking, including internet surveys, self-completion questionnaires, postal, telephone, and face-to-face interviews.

Collis and Hussey (2014) suggested that there are two types of surveys: descriptive, and analytical. While a descriptive survey is chosen with an aim to offer a precise representation of a social issue at one time or various times, an analytical survey attempts to establish a relation between variables (Collis & Hussey, 2014). Bryman and Bell (2014) listed three steps to conducting a survey: sampling, data collection, and development of the instrument. Sampling is described as taking small percentage of the large population, forming interpretations of the selected sample in order to generalise the outcomes to the larger population, and to improve understanding of the issues at hand. Data collection entails selecting an adequate methodology to collect the data from the sample, including from online or offline self-completed questionnaires or face-to-face interviews.

The present study has selected a quantitative method to examine the 11 hypotheses. Surveys are the most suitable approach for this study as they have the following advantages, highlighted by Bryman & Bell (2014) and Gillham (2007):

- They are economical
- They can be a quick means to gather data from large population
- Participants can finish the survey at their own pace

- Surveys are convenient
- Simple data analysis can be used for direct answered questions
- Immediate response is not required, which results in less pressure on participants
- Privacy is easy to ensure
- Interviewer bias is removed
- Questions are standardized between respondents.

Cameron and Price (2009) suggested using a questionnaire approach in the following circumstances:

- If there are limited resources
- Where there are many potential participants
- If there is a wide geographical area to cover
- If the researcher is able to contact the subjects to encourage survey completion
- If the investigator knows the questions to be asked
- The investigator is confident that the questions will be well understood.

Despite the advantages of using questionnaires to collect large data from participants, Bryman & Bell (2014) highlighted some drawbacks of using surveys. There is a lack of opportunity to ask questions to increase the respondent's understanding of the questions. Missing data could also raise an issue during the analysis stage. In the case of this research, lack of understanding of respondents in the final study is addressed by conducting a pilot study. In addition, an adaptation of existing questionnaires was utilized. Uncompleted surveys were eliminated to address the issue of missing data.

Gray (2014) listed two techniques for collecting data using surveys. Interviewers can complete the surveys, or respondents can complete the surveys. The interviewer-completed survey means that the investigator is logging responses from the participant, while the self-completed-survey refers to surveys completed by the participant or respondent. Interviewer-completed surveys include telephone surveys and structured interviews. Self-completed surveys could be in the form of intranet-based surveys, internet surveys, delivery and collection surveys, and mail surveys.

The current research utilized selected web-based surveys as using them provides numerous advantages over other types of surveys (Gray, 2014). Web based survey tools include the use of on-screen instructions, listed menus, thematic and colour options, and easier control access. Additionally, web-based surveys offer convenience and easier access to larger samples (Gray, 2014).

The present research implemented questionnaires to collect data due to its low financial cost, accessibility, and time availability for this study. In this thesis, the researcher has chosen the survey approach instead of in-depth interviews because they can be delivered to a large number of academics at little cost. On the other hand, interviews or conversations can be added to the surveys or used to discuss the surveys. Surveys combat this this limitation by offering academics a convenient time and place to complete the survey. Various issues can be objectively measured in tested and validated survey questions, but they can be explored with a qualitative approach.

The researcher employed survey data collection based on questionnaires designed by Bock et al., 2005; Bock & Kim, 2002; Gold, Malholtra & Segars 2001; Kankanhalli et al., 2005; Kim & Ju, 2008; Oliver & Kandadi, 2006; Politis, 2001; Taylor & Todd 1995; and Wasko & Faraj, 2005. Due to limitations pointed out by some researchers in relations to culture and other aspects the researcher elected to modify some of the questions to fit the academic context. There are advantages to using surveys that have already been designed as a basis for the research. Bryman and Bell (2014) pointed out significant advantages of using existing questions from existing surveys. First, these questions were piloted and validated and are available. Secondly, the advantage of comparing research results between different organizations, industries, and contexts is possible.

In the case of Bock et al.'s (2005) questionnaire, it was originally sent to many commercial companies in South Korea including food, chemical gas, and automotive sectors. Survey questions were generated from interviews of chief knowledge and information officers in those organizations. Interviews were conducted with executives leading KM initiatives to "*validate and supplement the motivational factors from exiting literature*" which they embedded in their survey instrument later. However, because the surveys were modified, it could not be

ensured that the survey was valid on its surface. The problem of validity and reliability was resolved in another way for this study. A pilot test was undertaken to ensure that the respondents could understand the survey and that they interpreted the questions in the manner in which the researcher intended. In summary, the advantages of using a robust tested instrument of reliability outweighed the advantages of developing an original survey. This would have involved piloting the survey on a larger scale, which would have been difficult considering the access issues. Additionally, all questions were subjected to validity testing during the structural equation modelling process where multiple reliability and validity steps are taken to ensure knowledge-sharing factors are accurately measured. Finally, several follow-up qualitative investigations were utilized to triangulate the results of the survey and the literature.

4.7.2 Sampling Strategy

Bryman and Bell (2014) suggested that sampling is referred to as taking a share of the large population, generating interpretations on this smaller size of a larger group, and then trying to generalise the findings to the larger group. Burns and Burns (2008, p. 197) described a sample as “any part of the population regardless of whether it is representative or not”. Population is defined as “The large group to which a researcher wants to generalize the sample results” (Johnson & Christenssen, 2008, p. 224). The population of this study is academics working in universities irrespective of whether they are public or private funded institutions. Today’s universities share common structure, governance and multinational faculty members and strive to compete locally and globally. Understanding KS behaviours and insights from academics’ viewpoints is the key objective of this study regardless of institutions’ location as it is out of scope.

It is nearly impossible to collect and analyze data from every academic working in these institutions and impractical for the current study to survey the whole population of academics due to many restrictions and access problems. In conducting the present study, the population selected could be selected using probability sampling or non-probability sampling. Probability (representative) sampling methods provide that each person that meets the criteria in the large group and have equal opportunity of being chosen. Bryman and Bell (2014) listed several types of

probability sampling methods, including simple, systematic, stratified, and cluster sampling. Non-probability sampling stresses that the likelihood of each person being selected is unknown (Saunders et al., 2016). Types of non-probability sampling involve convenience, snowball and quota sampling techniques (Bryman & Bell, 2014).

During the pilot data collection stage of the current research, the researcher experienced significant challenges and difficulties due to access problems to academics and a poor survey response rate (Fullwood et al., 2013). Moreover, many program chairs and department heads in several selected universities in the pilot locations refused to give permission for their academic staff to be surveyed using official emails and channels. The common reasons provided were:

- Work pressure
- University policies
- Fear of negative publicity, although research anonymity was assured
- Lack of time; and
- Lack of incentives to participate in the research

For these reasons, stratified sampling was not possible. The researcher adopted convenience sampling, which is a form of non-probability sampling. The convenience sampling was adopted and delivered by online survey Service Company for the following reasons:

- The size of the potential population for the study was very large
- Accessibility and availability of academics was a problem
- There was little time available to conduct the study
- It would have taken a great deal of effort and cost to cover a wide geographic area that would be required to get a non-convenience sample; and
- The convenience sampling meets purposive sampling criteria.

Critics of convenience sampling claim that findings from such sampling techniques cannot be generalized to the entire population. However, convenience sampling is well cited in business and management research because of the costs and

difficulties generated by probability sampling (Bryman & Bell, 2014). In addition, Wellington (1996) argued that this type of sampling could help to accomplish research that would not otherwise be possible due to lack of subject accessibility. Due to the rare studies attempting to understand the influence of knowledge-sharing determinants on academics, convenience sampling was selected as appropriate sampling method for this study and the surveys were independently delivered through an online survey tool.

4.7.3 Sampling Size

Collis and Hussey (2014) suggested that sample size needed to be large enough to tackle the research question and represent the population. In order to generalise the empirical findings, the researcher should ensure an adequate representation of the population. Collis and Hussey (2014) cautioned that small sample sizes could prevent significant statistical validations among the proposed relations or propositions. Skowronek and Duerr (2009) suggested that continuous monitoring and management of the data collection process would increase the representation of the sample size. Hence, repeated instances of survey distributions and reminders would assist in achieving adequate sample size in convenience sampling. However, according to Saunders et al., (2016), there are no conventions for assessing sample size in convenience sampling. Moreover, Patton (2002) suggested that the credibility and the value of the findings should be balanced with the resource considerations and limitations.

In this study, it was not feasible to survey all academics working at every HEIs due to access difficulties, time available for this study, and limited resources. In the interest of credibility, questionnaire replies were collected from academics working at institutions associated with the author and PhD supervisors who were affiliated and have contacts in different universities. Moreover, a broadly equal number of colleges or departments have been surveyed. Not all colleges and disciplines appeared in the survey list due to access difficulties and lack of conformity classifications in discipline or college titles. Disciplines that replied included colleges of business and economics, science, law, arts, medicine and health science, food and agriculture, information technology, education, social science and others.

A balance between university locations was also attempted. The study sample initially targeted academics working at the Gulf Cooperation Council including Saudi Arabia, UAE, Bahrain, Kuwait, Qatar, Oman in addition to Jordan and Egypt universities. The process took longer than expected due to very low responses despite the continuous repeated survey distribution efforts. Time and resources were important considerations. Survey distribution efforts included making follow-up phone calls to local and regional universities. Additional efforts included visiting program chairs and department heads in these universities, and sending reminder emails. Due to the very low response rate, this approach was abandoned and the link to the survey from the online questionnaire instrument was sent out for academics working at other universities. In total, more than 4,500 surveys were sent with only 115 responses received. As a result, snowball-sampling technique was adopted to increase accessibility to academics using multiple communication channels. These channels included exploiting academics' social media platforms such as Researchgate, Academia.edu, academic groups in LinkedIn and direct emails to academics' email addresses gathered from universities' website. As a result, 257 valid surveys were collected.

A further factor influencing the study sample size was the intention to use Structural Equation Modelling (SEM) to analyze the proposed conceptual framework. Utilizing SEM required a minimum sample of 150 (Anderson & Gerbing, 2002). The final total of completed questionnaires used in the survey was 257. Sample size in SEM studies can be categorized as 100 being poor, 200 being fair, 300 being good, 500 being very good and 1000 or greater being excellent (Tabachnich, Fidell, & Osterland, 2001). This means that the sample size for this study was acceptable, as 257 usable surveys were collected.

4.7.4 Instrument Measurements

The constructs used in the proposed framework were informed by existing literature and models. The measures used to operationalize constructs were created based upon previously verified instrument tools (Bock et al., 2005, Bock & Kim, 2002, Gold, Malholtra & Segars 2001; Kankanhalli et al., 2005; Kim & Ju, 2008; Oliver & Kandadi, 2006; Politis, 2001; Taylor & Todd 1995; and Wasko & Faraj, 2005). The scale used to quantify each construct had several items comprising of some contrary

items. The present study included positive and negative questions with an aim to ensure adequate readability and scale selection by the participants (Saunders et al., 2016).

The current study used the Likert-style scale to collect the respondent's opinion. A seven-point scale was utilized where 1 = extremely disagree, 2 = strongly disagree, 3 = slightly disagree, 4 = neutral, 5 = slightly agree, 6 = strongly agree, 7 = extremely agree. Chennamaneni et al. (2012) suggested that that the use of seven-point frequency scale can mitigate the bias linked to self-completed questionnaires. Dawes (2008) found, however, that using a seven-point scale could produce higher mean scores relative to the highest score it is possible to attain. Further, this difference was statistically significant. This may be a shortcoming in using the seven point Likert-style scale. The instrument measurement is reproduced in Appendix C.

4.7.5 Reliability of Instruments

Table 6 summaries all constructs cross-referenced to their resources and their reliabilities. The reliabilities presented in table 6 were reported by their corresponding authors. As evidently established in the indicated table, the reliabilities exceed the suggested value of 0.70, which in turn supports the validity of the measures used in the present study.

Table 6. Reliability of Instruments

Construct	Source	Cronbach's Alpha
knowledge-sharing intention	Adapted from Bock et al., (2005)	0.92 (Explicit) 0.93 (Implicit)
knowledge-sharing attitudes	Based-upon Morris et al., (2005); Bock et al., (2005)	0.85 0.91
Subjective norm	Adapted from Bock et al., (2005)	0.82
Perceived behaviour control	Adapted from Taylor and Todd (1995)	0.70
Perceived reciprocal benefit	Adapted from Kankanhalli et al (2005) Wasko and Faraj (2005)	0.85 0.90

Perceived loss of power	Kankanhalli et al., (2005)	0.95
Perceived Knowledge Self-efficacy	Bock & Kim (2002)	0.89
Trust	Kim & Ju (2008)	0.77
Affiliation	Adapted from Bock et al., (2005)	0.89
Innovativeness	Adapted from Bock et al., (2005)	0.87
Fairness	Adapted from Bock et al., (2005)	0.87
Leadership	Riege, 2005	0.87
KM tools and technology	Teng and Song , 2005 derived from Del study	
knowledge-sharing behaviour	Bock et al., (2005) Based upon Lee (2001)	0.92 (Explicit) 0.93 (Implicit) 0.90 (Explicit) 0.75 (Implicit)

4.7.6 Pilot Testing

According to Saunders et al., (2016), it is essential to pilot test the questionnaire before using it for data collection. The main of aim of this exercise is to enhance the survey enabling the researcher to obtain assessment of question's reliability and validity. Survey validity is concerned with suitability of the questions for the study, while reliability focuses on consistency of responses (Bryman & Bell, 2014). As stated earlier, the survey instrument was developed based on previously well-cited and validated scales. In addition, especially since the study was adapted, the results of each section of the survey will be compared to results of the remaining sections and then compared to the appropriate literature. Reliability and validity of the study was assured by PLS and SEM method of analysis.

Furthermore, group of 25 academics working at UAE, UK and Qatar universities validated the survey. Each faculty was asked about the clarity of the instructions, layout, attractiveness and wording of the questions. Next, a pilot study was conducted based on the revised survey. A total of 25 academics took part of the pilot study at those countries to ensure clarity and understanding of the instrument. The completed responses were analysed to ensure the survey was accurately

measuring the constructs of interest. Finally, the survey was submitted for ethical approval. The final survey is attached as Appendix B,

4.8 Ethical Considerations

Resnick (2015) argue that ethics refer to “method, procedure, or perspective for deciding how to act and for analyzing complex problems and issues” in a socially conscious manner (para. 4). Confidentiality, anonymity and preventing harm on participants are considered ethical considerations which require close attention by the researcher. The researcher attempted to address all ethical requirements during all phases of the thesis. The respondents were told about the goal and significance of the research and why their contribution was essential for the study. In addition, voluntary participation in the survey was communicated to all respondents in the cover letter prior to beginning the survey. The online survey tool also has an automatic feature that can be utilized which discontinues the survey if the individual does not accept the privacy standards. As this study was guided by Brunel University Research Committee standards, approval of the committee was obtained prior to preforming the research. The approval is contained in Appendix A.

4.9 Chapter Summary

This chapter has highlighted the research design for this study. It began by introducing the concept of the research onion and following an orderly method of designing the research, suggested by the layers of the onion. The research philosophy was positivist in order to develop a framework for knowledge-sharing factors and test several hypotheses and relationships. The philosophy was changed to positivist with pragmatic overtones when the research was expanded. The chapter distinguished between different research methodologies and selected a quantitative approach, which can be used as an instrument for exploring proposed relationships among variables (Creswell, 2013). Deductive reasoning was utilized during empirical testing of the 11 hypotheses with a purpose to accept or reject them.

Research strategies linked with the quantitative approach utilized surveys and experimental studies (Bryman & Bell, 2014). Surveys were chosen as the primary

data collection tool for this research. The remainder of the chapter explained the sampling strategy and ethical concerns. In the next chapter, the findings of the research are presented.

5.0 CHAPTER FIVE – FINDINGS

5.1 Introduction

This chapter provides the findings of the questionnaire that was developed in the methodology chapter. In this study, the Partial Least Square (Smart-PLS) software version 3.0 has been used to provide Structural Equation Modelling (SEM) on the survey findings. Findings of the SEM analysis are presented in the subsequent sections.

5.1.1 Demographic Data

Data was collected from 257 respondents using an online questionnaire instrument. Invitations were sent out to academics working at the Gulf Cooperation Council including Saudi Arabia, UAE, Bahrain, Kuwait, Qatar, Oman in addition to Jordan and Egypt universities. Low response rates and participation led to extending email invitations to the online survey to academics working at other institutions associated with the author and PhD supervisors who were affiliated and have extensive contacts in different universities. A snowball sampling technique was utilized to enhance access to academics and using multiple platforms such as Researchgate, Academic.edu and academic groups in LinkedIn.

The questionnaire results were assembled into SPSS. A seven-point Likert-style scale was used in all questions except the last set of questions. In the last set, a five-point Likert-style scale was used to identify type of knowledge shared among academics. According to Saunders et al. (2012), inclusion of positive and negative worded questions enhances the consistency of questionnaires. This study utilized both negative and positive questions in the survey, and the results were inverted as recommended by Pallant (2010) in order to facilitate percentage and means comparison.

5.1.2 Data Collection

The study gathered a total of 288 surveys using online collection mechanisms through an online survey instrument. A total of 31 questionnaires disqualified from

the study because the respondents did not complete them. A total of 257 valid questionnaires were included for further examination. According to SEM guidelines, sample size can be considered as follows: 100 surveys or less are considered a poor sample; 200 are a fair sample; 300 are a good sample, 500 are a very good sample size, and 1000 or more are an excellent supply (Comrey & Lee 1992, Tabachnich et al., 2001). The sample size of 257 surveys is thus acceptable.

Recent research suggests that sample sizes adequate for one research purpose may not be adequate for another. As Wolf et al. (2015) pointed out, ‘one size does not fit all’, and ‘more is not always better,’ making it difficult to pinpoint any one sample size that will, or will not, be adequate. In fact, Wolf et al. (2015) calculated that depending on the analysis pattern utilized, an adequate sample in a single case could range from 30 to 240. When more information is available per sample, the number of samples in order to be adequate may be smaller (Wolf et al., 2015). However, it is still important to note that even with this concern, the sample size was over this level. Wolf et al. (2015) asserted that more important than sample size is the completeness of the data. If all of the samples are complete, then fewer samples are needed to be adequate. It is only when data is missing that SEM sample size must be increased. In the current study, any incomplete samples were discarded; the remaining 257 samples were complete.

The age of the participants is summarized in table 7. The data show that 30% of the participants were between 31-40, followed by 28% between the ages of 51-60, and 25.3% between the ages of 41-50. Examination of the age category indicates that older academics aged 51 and older counted for just less than 40% of the survey participants.

Table 7. Age of Respondents

Age	Frequency	Percent
21-30	16	6.2
31-40	77	30.
41-50	65	25.3
51-60	72	28.
Above 60	27	10.5
Total	257	.100.

The gender of the participants is provided in table 8. The scores reveal that there were more male participants (57.6%) than female (42.4%).

Table 8. Gender of Respondents

Gender	Frequency	Percent
Male	148	57.6
Female	109	42.4
Total	257	.100.

The education level of the participants is summarized in table 9. A large percentage of the participants reported that they held PhD/Doctorate degrees (59.1%) or Master's degree (38.5%). This is consistent with the desired population of academics holding a teaching and/or research post at universities and colleges. Additionally, table 9 illustrates that 2.3% of the participants had other academic qualifications.

Table 9. Education Level of Respondents

Education Level	Frequency	Percent
Master	99	38.5
PhD / Doctorate	152	59.1
Other	6	2.3
Total	257	.100.

Respondents reported being employed in a wide range of disciplines, including Social Science, Arts and Humanities, Science, Technology, Engineering and Mathematics (STEM), Health and Social Care. The participant's tenure at the academic department fluctuated between less than 5 years to more than 26 years. Of the academics, 44.7% were new to the department. They reported being in the department for 5 years or less. An additional 26.5% had been in the department for 6-10 years, 13.6% for 11-15 years, 6.2% for 16 to 20 years, 4.7% for 21 to 25 years and 4.3% over 26 years. Table 10 illustrates participants' distribution for the academics' tenancy at the institution.

Table 10. Respondents' Tenure in Department

Tenure at Department	Frequency	Percent
0-5	115	44.7
6-10	68	26.5
11-15	35	13.6
16-20	16	6.2
21-25	12	4.7
Above 26	11	4.3
Total	257	.100.

In contrast to the time spent at the department, respondents reported nearly balanced time in higher education in general. Table 11 shows respondents' time spent in higher education in general.

Table 11. Respondents' Time in Higher Education

Time in Higher Education	Frequency	Percent
0-5	64	24.9
6-10	48	18.7
11-15	58	22.6
16-20	32	12.5

21-25	21	8.2
Above 26	34	13.2
Total	257	.100.

In terms of academic positions, lecturers were the largest participants in the survey at 21.8%, followed by associate professors at 18.3%. Assistant and full professors were equally represented at 14% each.

Table 12. Academic Posts of Respondents

Academic Position	Frequency	Percent
Lecturer	56	21.8
Senior lecturer	20	7.8
Assistant Professor	36	14
Associate Professor	47	18.3
Professor	36	14
Researcher	14	5.4
Instructor	16	6.2
Other	32	12.5
Total	257	.100.

The type of organizations that respondents worked at were represented fairly equally. Fifty Seven percent of the respondents reported that they work for public universities and 43% worked for private institutions.

Table 13. Type of Organizations

Organization Type	Frequency	Percent
Public	147	57.2
Private	110	42.8
Total	257	.100.

5.1.3 Descriptive Statistics

Questions 11-24 in the questionnaire are intended to measure the dependent variables identified for testing and validation. A seven-point Likert-style scale was used to measure these variables. The choices for each question were: 1= Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4= Neither Agree nor Disagree 5=Slightly Agree, 6=Agree, 7=Strongly Agree. Questions 25-26 also used a seven point Likert-style scale. The choices for each question were: 1=Very Infrequently, 2=Infrequently, 3=Somehow Infrequently, 4=Moderate Frequency, 5=Somehow Frequently, 6=Frequently, 7=Very Frequently. Those questions measured the use of KM tools and technology to share knowledge in universities. Question 27 was intended to determine the type of knowledge academics shared among each other. A five-point Likert-style scale was used to measure these variables; the choices for each question were: 1=Never, 2=Seldom, 3=Sometimes, 4=Often, 5=Always.

Table 14. Intent to Share Knowledge

		Mean	SD	1	2	3	4	5	6	7
INT1*	I have no intention of sharing knowledge with departmental members	4.33	1.65	4.7	13.6	18.3	3.9	32.3	21.4	5.8
INT2	I intend to always provide my knowledge at the request of organizational members	3.87	1.64	7.0	17.5	18.7	17.1	23.3	10.5	5.8
INT3*	I intend to share my knowledge less frequently with other organizational members in the future	4.66	1.60	4.7	9.3	10.1	9.3	31.9	26.8	7.8
INT4	I intend to share my knowledge with any colleague if it is helpful to the organization	4.79	1.62	3.9	10.1	7.8	12.1	22.2	35.0	8.9

*(*Denotes negatively worded questions)*

Table 14 indicates overall positive intention to share knowledge by academics. Of the respondents, 60% reported intent to share knowledge with other members of

the institution while 66.1% affirmed that they would share their knowledge with other academics if it helped the institution. A total of 66.5% either ‘slightly agreed’, ‘agreed’, or ‘strongly ‘agreed’ that they would still share their knowledge more in the future.

Table 15. Attitudes towards Sharing Knowledge

		Mean	SD	1	2	3	4	5	6	7
ATT1	Sharing knowledge with colleagues is harmful	4.25	1.71	5.8	12.5	19.1	12.8	21.8	19.1	8.9
ATT2	Sharing knowledge with colleagues is good	4.07	1.69	7.0	16.0	16.0	12.5	24.1	18.7	5.1
ATT3	Sharing knowledge with colleagues is pleasant	4.31	1.84	9.7	13.2	11.7	9.7	20.6	27.6	7.4
ATT4	Sharing knowledge with colleagues is worthless	4.79	1.62	3.9	10.1	7.8	12.1	22.2	35.0	8.9

*(*Denotes negatively worded questions)*

In general, respondents have a positive attitude towards sharing knowledge as depicted in table 15. For example, 66% felt that knowledge-sharing is not waste of time, while 55% reported that sharing knowledge is a pleasant experience. However, 16% felt that sharing knowledge is not a good practice. Of the population, 60% disagreed with the statement ‘sharing knowledge with colleagues is harmful,’ hinting that knowledge-sharing was a useful activity.

Table 16. Subjective Norms towards Sharing Knowledge

		Mean	SD	1	2	3	4	5	6	7
SN1	In my opinion, my manager believes that I should share knowledge with my co-workers	4.96	1.65	3.1	9.3	10.1	6.6	22.2	33.9	14.8
SN2	Generally speaking, I try to follow organization’s policy toward knowledge-sharing	3.87	1.64	7.0	17.5	18.7	17.1	23.3	10.5	5.8
SN3	Generally speaking, I accept and carry out my manager’s decision even	4.60	1.67	4.7	9.7	14.8	9.3	24.1	28.4	8.9

	though I disagree with the decision

Generally, the academics felt that colleagues, managers and administrators supported knowledge-sharing. Of the respondents, 71% reported that they believe that their manager encouraged knowledge-sharing (SN1) to some degree. Of the respondents, 33% either 'slightly agreed' or 'agreed' that they follow the policy of knowledge-sharing in the institution. However, 17% they reported that they do not. When asked if academics follow their manager's instruction blindly (SN3), 61.4% affirmed they would. However, 14.8% of the respondents were neutral. When academics were asked about colleagues' opinions or policies, respondents tended to answer with neutral responses (SN2: 17.1%, SN3: 9.3%).

Table 17. Perceived Behaviour Control

		Mean	SD	1	2	3	4	5	6	7
PBC1	I have enough time to share knowledge with colleagues	4.23	1.75	3.9	17.9	21.0	3.9	23.3	21.4	8.6
PBC2	I have the necessary tools to share knowledge with colleagues	5.0	1.49	1.2	7.8	12.1	5.4	27.6	34.6	11.3
PBC3	I have the ability to share knowledge with colleagues	5.75	1.14	0.8	2.3	3.1	1.6	23.0	45.9	23.3
PBC4 *	Sharing knowledge with colleagues is not within my control	5.52	1.28	0.8	3.1	6.2	4.3	24.9	40.1	20.6

*(*Denotes negatively worded questions)*

In general, table 17 indicated academics have the ability, time, and tools to perform knowledge-sharing in their institutions. Of the respondents, 62% affirmed that they had adequate tools to share knowledge, while 7.8 disagreed with that statement. Another 38% reported that they did not have time to share knowledge (PBC1), while 53% affirmed that they do have time to share. A large number of academics (60%) either agreed or strongly agreed that knowledge-sharing was under their control (PBC4).

Table 18. Perceived Reciprocal Benefits Towards Knowledge-sharing

		Mean	SD	1	2	3	4	5	6	7
PRB1	When I share knowledge with colleagues, I expect them to respond to my request for knowledge	4.74	1.76	5.4	10.9	9.3	10.5	19.1	31.2	13.2
PRB2	When I share knowledge with colleagues, I believe that my queries for knowledge will be answered in the future	4.97	1.53	3.5	6.6	8.9	7.4	27.2	36.6	9.7
PRB3	My colleagues help me, so it is only fair to help them out when they are in need of knowledge	4.60	1.84	7.0	10.1	11.7	13.2	20.6	19.5	17.9

The majority of the responses of the questions in table 18 indicated that academics would engage in knowledge-sharing activities if they felt that their request for knowledge would be answered. Of the respondents, 63.5% confirmed that they expected others to return their knowledge request if they shared knowledge with them. Furthermore, 73.5% even expected a return from other academics when donating knowledge.

Table 19. Perceived Loss of Knowledge Power

		Mean	SD	1	2	3	4	5	6	7
PLP1	Sharing knowledge with colleagues makes me lose my unique value in the organization	2.33	1,58	39.3	31.5	9.7	3.9	8.6	6.2	0.8
PLP2	Sharing knowledge with colleagues makes me lose my power base in the organization	2.36	1.56	37.4	33.5	7.8	7.8	5.4	9.3	6.6
PLP3	When I share knowledge with colleagues, I believe I will lose the uniqueness of my knowledge	2.30	1.49	37.0	33.9	12.1	2.7	8.9	5.1	0.4
PLP4	In my opinion, sharing knowledge with colleagues makes me lose the knowledge that makes me stand out with respect to others	2.19	1.45	39.7	33.1	13.6	1.9	5.4	5.8	0.4

Respondents overwhelmingly reported that losing knowledge power was **not** a factor that would influence their knowledge-sharing activities. Table 19 reflects these findings. Of the respondents, 80.5% affirmed that sharing their knowledge would not make them lose their value in the organization. In all remaining questions, academics disagreed that sharing knowledge would make them lose their unique knowledge: 78.7% (PLP2), 83% (PLP3), and 86.4% (PLP4).

Table 20. Perceived Self-efficacy towards Knowledge-Sharing

		Mean	SD	1	2	3	4	5	6	7
PSE1	Sharing my knowledge would help other members in the organization to solve problems	6.08	0.76	0.0	0.0	0.4	2.7	15.2	51.8	30.0
PSE2	Sharing my knowledge would create new opportunities for the organization	5.93	1.03	0.0	0.4	3.5	6.2	13.6	45.1	31.1
PSE3	Sharing my knowledge would improve work processes in the organization	5.93	1.02	0.0	1.6	2.7	2.7	16.0	48.2	28.8
PSE4	My knowledge-sharing would help the organization achieve its goals	5.93	0.97	0.0	1.6	1.2	3.9	16.7	49.4	27.2

Table 20 depicted that academics overwhelmingly felt that they would share their knowledge for the benefits of the institution. There was strongly positive agreement (81.8%) on donating knowledge to solve organizational problems. Similar responses occurred on the rest of questions, reflecting a wide positive attitude towards the value of the knowledge shared by academics and its benefits to their institutions.

Table 21. Perceived Interpersonal Trust

		Mean	SD	1	2	3	4	5	6	7
TRU1	I generally trust my colleagues, therefore I share my knowledge with them	5.42	1.41	1.9	3.5	7.0	5.4	20.6	42.8	18.7
TRU2	It is easy for me to trust my colleagues	5.12	1.52	1.6	6.6	10.5	5.4	30.0	27.6	18.3

TRU3	My colleagues and I trust each other	5.06	1.50	2.7	3.9	12.1	8.6	25.3	33.5	14.0

Many academics (82.1%) indicated that trusting their colleagues is a pre-condition to sharing knowledge with them. Of the respondents, 75% affirmed that it is easy to trust other colleagues before sharing, while 17% indicated it was difficult to trust co-workers. When academics were asked about their opinion as to whether or not fellow academics trust each other in general, 72% responded that their fellow academics trust each other. However, 12.1% of the respondents were neutral on this question. Table 21 indicated that trust is strongly a factor in knowledge-sharing among academics.

Table 22. Organizational Climate: Affiliation

		Mean	SD	1	2	3	4	5	6	7
CLMTA1	In my opinion, members in my department keep close ties with each other	4.86	1.62	1.9	10.1	13.2	6.6	24.9	29.6	13.6
CLMTA2	I feel that members in my department consider other member's opinion highly	4.86	1.52	3.1	7.0	10.1	8.9	34.2	24.9	11.7
CLMTA3	In my opinion, members in my department are team players	4.76	1.63	4.7	7.8	12.8	6.6	28.0	30.0	10.1
CLMTA4	In my opinion, members of my department are loyal to their discipline	5.31	1.35	1.6	5.1	2.7	11.7	24.9	38.9	15.2

There was little spread of opinion on these questions, which intended to measure affiliation to the institution. Of the respondents, 68.1% agreed to some extent that departmental members kept close ties with each other (CLMTA1). There was even less spread of responses to CLMTA2 when academics were asked if the opinion of colleagues are considered. Only 20% reported that they disagree, while 70% confirmed that they feel that other member's opinions are considered. Of the respondents, 68.1% felt that their colleagues are team players, while 12.8% could

not decide. Exceptionally large number of academics (79%) agreed that academics are loyal to their discipline. A small number disagreed (9.4%) with that notion.

Table 23. Organizational Climate: Innovativeness

		Mean	SD	1	2	3	4	5	6	7
CLMTI1	I feel that my department encourages suggesting ideas for new opportunities	4.96	1.65	3.1	9.3	10.1	6.6	22.2	33.9	14.8
CLMTI2	I feel that my department puts much value on taking risks even if that turns out to be a failure	3.87	1.64	7.0	17.5	18.7	17.1	23.3	10.5	5.8
CLMTI3	I feel that my department encourages finding new methods to perform a task	4.60	1.67	4.7	9.7	14.8	9.3	24.1	28.4	8.9

Table 23 indicated that the majority of academics felt strongly that their institutions place great important on innovating and creativity. Of the respondents, 70.9% agreed to some extent that their department encouraged creativity and created new opportunities. However, 22.5% disagreed. On CLMT12, the opinion was also spread on the topic of risk-taking. Of the respondents, 43.2% did not feel that their department put value on taking risks even if results are negatives, while only 39.6% agreed to some extent on risk-taking by institutions. On the issue of creativity, the respondents tilted towards agreeing that their department would encourage finding new methods to perform tasks (61.4%), while 29.2% disagreed to some extent that their institution would encourage creativity to find alternative methods to do tasks.

Table 24. Organizational Climate: Fairness

		Mean	SD	1	2	3	4	5	6	7
CLMTF1	In my opinion, members in my department can trust department head's judgment	4.74	1.76	5.4	10.9	9.3	10.5	19.1	31.5	13.2
CLMTF2	In my department, objectives are reasonable	4.97	1.53	3.5	6.6	8.9	7.4	27.2	36.6	9.7
CLMTF3 *	In my department, I feel that my manager does not show favouritism	4.60	1.84	7.0	10.1	11.7	13.2	20.6	19.5	17.9

*(*Denotes negatively worded questions)*

Respondents to CLMTF3 hinted that some academics feel that colleagues receive favorable treatment. Although the question was negatively worded, 28.8% agreed to some extent that some team members were favored by managers. Other questions indicated that academics feel that managers and objectives are distributed fairly. Of the respondents, 63% of academics agree that they can trust the actions of department heads, although a substantial minority of 25.6% believe otherwise. When asked if the objectives are reasonable within the department, a majority of academics (73.5%) agreed to some extent. A small minority (28.8%) disagreed with that question.

Table 25. Leadership

		Mean	SD	1	2	3	4	5	6	7
LEAD1	In my opinion, members of my department have a clear view of the direction of the institution	4.33	1.65	4.7	13.6	18.3	3.9	32.3	21.4	5.8
LEAD2 *	I feel that the opinions of members of my department are not sought by the senior management team	3.87	1.64	7.0	17.5	18.7	17.1	23.3	10.5	5.8
LEAD3	I feel that the senior management team are respected by members of my department	4.66	1.60	4.7	9.3	10.1	9.3	31.9	26.8	7.8
LEAD4	I can trust my manager's judgment	4.79	1.62	3.9	10.1	7.8	12.1	22.2	35.0	8.9

*(*Denotes negatively worded questions)*

LEAD1 and LEAD2 showed a wide spread of opinions by respondents. Academics were fairly spread on the issue of whether or not there was a clear view of the direction by leadership. While 59.5% agreed to some extent that leadership had a clear vision to the future, a large number of academics (36.6%) disagreed to some extent with that opinion. A small percentage of the respondents (3.9%) was undecided.

When asked if the academic's opinion was requested by senior management, the respondents were fairly split with 39.6% agreeing to some extent, while 43.2% disagreed to some extent on the idea that their opinions were sought by senior management. This would indicate feelings of separation between academics and university managers. The majority of academics (66.5%) agreed that senior management is respected by academics, while 24.1% disagreed to some extent. This figure represents a minority of the respondents.

Table 26. KM Tools and Technology

		Mean	SD	1	2	3	4	5	6	7
IT1	In my organization, it is easy to use tools and technology to share knowledge	4.95	1.67	3.9	10.9	6.6	4.7	25.3	35.8	12.8
IT2	In my organization, tools and technology for sharing knowledge are reliable	4.76	1.59	3.5	7.4	14.0	10.5	23.0	32.7	8.9
IT3	In my opinion, tools and technology for sharing knowledge are available when needed	4.90	1.57	3.1	8.9	8.6	8.9	24.1	37.4	8.9
IT4	In my opinion, tools and technology for sharing knowledge can be customized to fit individual needs	4.42	1.71	7.4	10.1	13.2	12.8	20.2	31.1	5.1

Table 26 depicted broadly that universities are investing in IT infrastructure to be used for knowledge-sharing activities. Of the respondents, 73% of the academics agreed to some extent that technology platforms are easy to use for sharing knowledge in their institutions. However, 64.6% of respondents agreed to some levels that the IT infrastructure was reliable for sharing knowledge, while 24.9% did

not agree with that perception. A small percentage of the academics (20%) felt that technology was not available when needed for sharing knowledge. In general, academics strongly believed that technology is available and reliable for knowledge-sharing in a university setting.

Table 27. Using Technology

		Mean	SD	1	2	3	4	5	6	7
UIT1	I use e-mail to share knowledge with my co-workers	5.36	1.74	5.4	5.8	2.7	12.5	10.9	32.3	30.4
UIT2	I use discussion forums to share knowledge with my co-workers	3.29	1.88	24.9	18.3	10.9	14.4	14.0	15.2	2.3
UIT3	I use desktop computer conferencing (using networked PC simultaneously for discussion and information exchange with tools such as net meeting, instant messaging, etc.) to share knowledge with my co-workers	3.25	1.91	24.5	22.2	9.7	12.5	14.0	15.2	2.3
UIT4	I share knowledge by inputting it into knowledge repository/company databases (containing existing expertise, lessons learned, best practices etc.)	3.44	1.96	23.3	17.9	10.5	13.6	14.4	14.4	5.8
UIT5	I use intranet (including university portal) to share knowledge with colleagues	3.91	1.88	14.4	16.7	8.6	14.8	20.2	19.5	5.8
UIT6	I use computerized directory on experts with	3.20	1.90	25.3	21.4	10.9	14.4	11.3	12.1	4.7

		Mean	SD	1	2	3	4	5	6	7
	specific knowledge to locate the expertise that colleagues need									
UIT7	I use videoconferencing to share knowledge with colleagues	2.84	1.84	31.5	26.5	7.4	10.5	13.6	6.2	4.3
UIT8	I use teleconferencing to share knowledge with colleagues	2.86	1.87	32.3	25.7	7.0	8.6	15.6	7.0	3.9
UIT9	I share knowledge through face-to-face discussions with colleagues	5.66	1.52	2.3	5.8	0.4	8.9	15.6	31.5	35.4
UIT10	I use electronic bulletin boards to share knowledge with my co-workers	2.79	1.82	32.7	25.7	8.2	12.8	7.4	10.5	2.7
UIT11	I use chat rooms to share knowledge with my co-workers	2.41	1.66	41.2	26.1	8.2	7.4	11.7	3.1	2.3

In Table 27, emails and face-to-face communication were the preferred method of sharing knowledge. Of the respondents, 73.6% confirmed that email was widely used for sharing knowledge with colleagues, while 12.5% were undecided. Face-to-face communication was selected by 82.5% of academics to share information.

Table 27 indicates weak use of e-boards, chat rooms, video conferencing and centralized knowledge repositories. This statistic suggests that universities are not investing in KM tools and focusing instead on classical IT and intranet infrastructure. Respondents to UIT4 indicated that more than 51% disagreed to some extent that they use knowledge repositories for sharing knowledge, while 13.6% neither agreed nor disagreed on this.

In table 28, the actual knowledge-sharing section, respondents reported positive and frequent sharing of knowledge with other academics. Of the respondents, 46% report that they either ‘frequently’ or ‘very frequently’ shared know-what knowledge with other academics, while a small number (5%) reported that they infrequently

shared know-what knowledge. Respondents to AKS3 were consistent with earlier respondents on the use of knowledge repositories; the majority affirmed that they do not use them for sharing knowledge. Respondents mostly agreed that they do share many types of knowledge frequently and very frequently.

Table 28. Actual Knowledge-sharing

		Mean	SD	1	2	3	4	5	6	7
AKS1	I share factual knowledge (know-what) from work with my co-workers	4.92	1.66	5.1	6.2	7.4	16.3	19.1	30.0	16.0
AKS2	I share internal reports and other official documents with my co-workers	4.59	1.81	8.6	9.3	8.6	14.4	17.9	30.0	11.3
AKS3	I share knowledge by inputting it into knowledge repository/organization databases (containing existing expertise, lessons learned, best practices etc.)	3.75	2.00	17.9	19.8	7.4	12.5	16.3	18.3	7.8
AKS4	I share (know-how) or tricks of the trade from work with my co-workers	4.64	1.72	4.3	12.1	9.3	16.3	19.1	25.3	13.6
AKS5	I share expertise from education or training with my co-workers	4.81	1.67	4.3	8.9	8.2	16.0	19.5	29.6	13.6
AKS6	I share (know-why) knowledge from work with my co-workers	5.0	1.52	2.3	6.6	8.9	13.6	20.6	35.4	12.5

In the actual knowledge-sharing section, respondents reported positive and frequent sharing of knowledge with other academics. Forty six percent of respondents either ‘frequently or ‘very frequently’ share know-what knowledge with other academics, while small number (5%) reported that they infrequently share know-what knowledge. Respondents to AKS3 were consistent with earlier respondents on the

use of knowledge repositories; the majority affirmed that they do not use them for sharing knowledge. Respondents mostly agreed that they do share many types of knowledge frequently and very frequently.

Table 29. Types of Knowledge Shared

		Mean	SD	1	2	3	4	5
KT1	Academic (i.e. teaching slides, assessment strategies, knowledge delivery, course design)	3.95	0.98	1.9	5.8	21.4	37.0	33.9
KT2	Academic research	3.52	1.12	5.4	13.6	25.7	34.2	21.0
KT3	Organizational (i.e. processes, procedures, business plans)	3.55	1.18	5.8	14.4	24.1	30.0	25.7
KT4	Social	3.33	1.23	10.1	14.0	28.4	27.2	20.2

In general, academics reported that they shared all types of knowledge. Responses for every question in this set were typically in the ‘sometimes’, ‘often’, and ‘always’ category. Table 29 indicated that 92.3% of academics shared teaching slides, course design and knowledge-delivery compared to 80.9% who shared academic research knowledge.

5.1.4 Structural Equation Modelling (SEM)

The current research utilized the SEM technique and Partial Least Squares (PLS) (Smart PLS version 3.0) to verity the hypotheses and the performance of the suggested conceptual framework. SEM required two phases for model building (Hair et al., 2006; 2011). The first stage entailed the evaluation and adequacy of the measurement model followed by the examination of the structural relations in the second stage. It can be argued that the measurement model verified the relations among a number of measurement items based on a theory, while the structural model verified the relations among the factors as theorized. The next section details the suitability of measurement model and the structural model for the current study.

5.1.5 Assessment of the Measurement Model

The measurement model stipulated the relations between the indicators and the latent construct they are projected to quantify. According to Hair et al. (2006), assessment of the measurement model is needed to examine both convergent and discriminant validity. Convergent validity is concerned with the degree of correlation a set of measures of constructs theoretically has. By contrast, discriminant validity verifies the degree of how constructs are un-related to other constructs. Together, these two validities provide an indication concerning the suitability of the measurement model. Hair et al. (2011) suggested the following phases for assessing the measurement model:

1. Quantifying the factor loadings of each of the apparent variable, with the recommended threshold to be above 0.4

2. Determining composite reliability and Cronbach's alpha, with the recommended threshold to be above 0.7. This is used to ensure internal consistency.

3. Measuring the Average Variance Extracted (AVE) in order to ensure convergent validity, with a recommended threshold of more than 0.5.

4. Applying Fornell-Larcker's criterion where the square root of the AVE for each construct exceeds the correlations between the construct and all other constructs. This used to ensure discriminant validity.

5.1.6 Convergent Validity

Convergent validity was examined by evaluating the loadings of the individual measures to their respective constructs and then calculating the composite reliabilities. PLS was used to assess convergent validity. Two independent tests were performed.

An initial PLS test with 257 Samples was performed. The first test produced measures' weights, loadings, composite reliabilities, and AVEs. Next, bootstrapping was applied to check the significance, path coefficients and T- values. The loadings for each measurement item were examined. Most of the items had loadings more

than the recommended threshold of 0.70 (Hair et al., 2006). Limited items had less than 0.70. As these loadings were close to the recommended level of 0.70, it was decided to keep the items in the model. The weights, loadings, standard error and t-values for the measurement items in the model are provided in table 30.

Table 30. Factor Loadings and Weights

		Loadings	Weights	Standard Error (STERR)	T Statistics (|O/STERR|)	P Values
Intention to share knowledge	INT1	0.734	0.313	0.03	16.19	0.000
	INT2	0.820	0.440	0.03	40.54	0.000
	INT3	0.716	0.253	0.03	13.44	0.000
	INT4	0.724	0.317	0.02	14.37	0.000
Attitudes towards knowledge-sharing	ATT1	0.839	0.440	0.026	32.710	0.000
	ATT2	0.865	0.365	0.019	44.930	0.000
	ATT3	0.860	0.366	0.021	40.437	0.000
Subjective Norm	SN1	0.863	0.352	0.021	42.037	0.000
	SN2	0.828	0.403	0.020	41.819	0.000
	SN3	0.914	0.397	0.011	85.452	0.000
Perceived Behaviour Control	PBC1	0.670	0.248	0.075	8.946	0.000
	PBC2	0.842	0.461	0.027	30.981	0.000
	PBC3	0.803	0.331	0.052	15.349	0.000
	PBC4	0.679	0.265	0.078	8.678	0.000
Perceived Reciprocal Benefits	PRB1	0.881	0.433	0.018	49.122	0.000
	PRB2	0.802	0.396	0.031	26.039	0.000
	PRB3	0.810	0.371	0.034	23.623	0.000
Perceived Loss of Power	PLP1	0.805	-0.064	0.610	1.321	0.187
	PLP2	0.971	0.671	0.765	1.269	0.205
	PLP3	0.947	0.501	0.741	1.278	0.202
	PLP4	0.733	-0.102	0.570	1.285	0.199
Perceived Self-Efficacy	PSE1	0.858	0.311	0.165	5.213	0.000
	PSE2	0.884	0.305	0.161	5.502	0.000
	PSE3	0.882	0.237	0.164	5.368	0.000
	PSE4	0.855	0.298	0.199	4.301	0.000
Trust	TRU1	0.847	0.320	0.034	24.990	0.000
	TRU2	0.900	0.332	0.025	35.303	0.000
	TRU3	0.930	0.463	0.010	91.223	0.000
Organizational Climate: Affiliation Innovativeness Fairness	CLMTA1	0.672	0.104	0.048	14.043	0.000
	CLMTA2	0.778	0.126	0.029	26.748	0.000
	CLMTA3	0.789	0.124	0.029	27.333	0.000
	CLMTA4	0.702	0.115	0.036	19.317	0.000
	CLMTI1	0.814	0.179	0.022	37.132	0.000
	CLMTI2	0.709	0.172	0.033	21.689	0.000
	CLMTI3	0.859	0.190	0.016	54.194	0.000
	CLMTF1	0.754	0.128	0.030	24.883	0.000
	CLMTF2	0.609	0.102	0.048	12.783	0.000
	CLMTF3	0.647	0.100	0.048	13.547	0.000
Leadership	LEAD1	0.714	0.284	0.048	14.917	0.000
	LEAD2	0.831	0.464	0.017	49.913	0.000
	LEAD3	0.709	0.247	0.054	13.029	0.000
	LEAD4	0.731	0.324	0.044	16.718	0.000
IT	IT1	0.899	0.336	0.020	45.179	0.000
	IT2	0.908	0.309	0.015	60.833	0.000
	IT3	0.888	0.247	0.025	35.536	0.000
	IT4	0.744	0.265	0.041	18.059	0.000
Actual knowledge-sharing	AKS1	0.845	0.214	0.020	42.102	0.000
	AKS2	0.704	0.140	0.053	13.369	0.000
	AKS3	0.652	0.161	0.047	14.013	0.000
	AKS4	0.838	0.174	0.030	27.884	0.000
	AKS5	0.873	0.248	0.019	46.721	0.000
	AKS6	0.880	0.288	0.017	50.652	0.000

Table 31 presents the composite reliabilities and AVE per construct. Composite reliability scores larger than the suggested threshold of 0.80 indicate good internal consistency (Hunter & Tan, 2009). Reliabilities exceed the recommended threshold of 0.70.

Table 31. Composite Reliabilities and AVE

	No. of Items	Composite Reliabilities	AVE
Intention to share knowledge(INT)	4	0.836	0.561
Attitudes towards sharing knowledge (ATT)	3	0.891	0.731
Subjective Norm(SN)	3	0.902	0.755
Perceived Behavioural Control (PBC)	4	0.838	0.566
Perceived Reciprocal Benefit(PRB)	3	0.871	0.692
Perceived Loss of Knowledge Power (PLP)	4	0.925	0.756
Perceived Self-Efficacy(PSE)	4	0.926	0.757
Trust (TRU)	3	0.922	0.798
Organizational Climate (CLMT)	10	0.922	0.543
Leadership (LEAD)	4	0.835	0.559
KM Tools and Technology (IT)	4	0.920	0.744
Actual Sharing of Knowledge (AKS)	4	0.915	0.645

A summary of the AVE analysis was highlighted in table 32. While the darkened diagonal components of the table signify the square root of the AVE scores, the off-diagonal components are the correlation between variables. As illustrated in the table, the square root of AVE records is more than 0.5, which is the recommended value. AVE for each element is considerably larger than any correlations involving the element. In other words, all constructs share larger variance with their own measures than with other elements in the model. Therefore, discriminant validity is established.

Table 32. AVE Analysis

	INT	ATT	SN	PBC	PRB	PLP	PSE	TRU	CLMT	LEAD	OS	IT	AKS
INT	**.74**												
ATT	0.67	**0.740**											
SN	0.81	0.61	**0.87**										
PBC	0.27	0.25	0.42	**0.75**									
PRB	0.60	0.58	0.64	0.31	**0.83**								
PLP	-0.18	-0.14	-0.27	-0.37	-0.21	**0.87**							
PSE	0.14	0.16	0.14	0.22	0.13	-0.41	**0.87**						
TRU	0.37	1.0	0.58	0.27	0.49	-0.36	0.22	**0.89**					
CLMT	0.70	0.678	0.91	0.45	0.81	-0.28	0.21	0.66	**0.73**				
LEAD	1.00	0.666	0.82	0.27	0.69	-0.18	0.14	0.44	0.80	**0.74**			
IT	0.34	0.46	0.40	0.36	0.40	-0.14	0.13	0.35	0.41	0.34	0.46	**0.86**	
AKS	0.34	0.28	0.41	0.40	0.36	-0.33	0.37	0.41	0.46	0.34	0.19	0.22	**0.80**

5.1.7 Discriminant Validity

Discriminant validity is concerned with how different one construct is from other all constructs in the proposed model. As suggested by Chin (1998) and Gefen and Straub (2005), two types of tests were executed to evaluate discriminant validity First, evaluation of the correlation of the variable scores with the measurement items is desired. Measures of constructs should be distinct, and need to have stronger load on their hypothesised construct than on the any other constructs in the model. Second, evaluation of the AVE is conducted to ensure that each construct shares larger variance with its measures than with the other constructs in the model. Chin (1998) suggested that the square root of the AVE for an individual construct should be bigger than the variance shared between the construct and other constructs in the framework and should be greater than 0.5 recommended threshold (Fornell & Larcker, 1981). In this context, AVE loading larger than 0.5 suggests that the construct accounts for at least 50% of measurement variance. In the current study, PLS was used to assess the discriminant validity. Table 33 highlights the loadings and cross loadings of all measures. Values indicate that all the measurement items load highly on their own latent construct rather than on other constructs.

Table 33. Measurement Indicator to Construct Correlation

	AKS	ATT	CLMT	INT	LEAD	PLP	OS	PBC	PRB	PSE	SN	IT	TRU
INTI1	0.26	0.58	0.51	**0.73**	0.71	-0.17	0.33	0.22	0.42	0.22	0.51	0.38	0.57
INT2	0.32	0.53	0.71	**0.82**	0.83	-0.14	0.31	0.22	0.52	0.04	0.83	0.34	0.53
INT3	0.13	0.48	0.47	**0.71**	0.71	-0.06	0.23	0.15	0.49	0.08	0.44	0.22	0.47
INT4	0.26	0.41	0.66	**0.73**	0.73	-0.17	0.17	0.21	0.64	0.11	0.58	0.28	0.41
ATT1	0.32	**0.84**	0.68	0.61	0.61	-0.18	0.36	0.31	0.60	0.10	0.60	0.40	0.81
ATT2	0.18	**0.86**	0.52	0.56	0.56	-0.08	0.38	0.19	0.44	0.10	0.49	0.40	0.88
ATT3	0.22	**0.85**	0.52	0.54	0.53	-0.11	0.43	0.15	0.47	0.20	0.47	0.47	0.88
SN1	0.43	0.47	0.81	0.59	0.59	-0.28	0.33	0.50	0.51	0.14	**0.86**	0.39	0.47
SN2	0.32	0.53	0.71	0.82	0.83	-0.14	0.31	0.22	0.52	0.04	**0.83**	0.34	0.53
SN3	0.33	0.58	0.86	0.70	0.71	-0.29	0.40	0.40	0.63	0.18	**0.91**	0.41	0.58
PBC1	0.29	0.25	0.31	0.26	0.25	-0.28	0.10	**0.68**	0.20	0.21	0.30	0.27	0.25
PBC2	0.26	0.30	0.37	0.26	0.26	-0.24	0.37	**0.84**	0.25	0.15	0.37	0.25	0.30
PBC3	0.39	0.12	0.37	0.16	0.16	-0.39	0.25	**0.80**	0.28	0.26	0.31	0.38	0.12
PBC4	0.26	0.14	0.30	0.16	0.16	-0.17	0.19	**0.67**	0.21	0.03	0.30	0.32	0.14
PRB1	0.33	0.52	0.75	0.66	0.67	-0.21	0.25	0.28	**0.88**	0.15	0.62	0.39	0.52
PRB2	0.30	0.48	0.61	0.60	0.59	-0.17	0.30	0.32	**0.80**	0.09	0.49	0.45	0.48
PRB3	0.25	0.45	0.65	0.44	0.45	-0.12	0.24	0.17	**0.81**	0.07	0.48	0.29	0.45
PLP1	-0.28	0.01	-0.20	-0.10	-0.11	**0.80**	0.02	-0.28	-0.14	-0.35	-0.21	-0.24	0.01
PLP2	-0.32	-0.13	-0.28	-0.18	-0.18	**0.97**	-0.09	-0.38	-0.20	-0.41	-0.27	-0.36	-0.13
PLP3	-0.31	-0.09	-0.24	-0.15	-0.15	**0.94**	-0.05	-0.32	-0.19	-0.38	-0.23	-0.32	-0.09
PLP4	-0.22	0.02	-0.19	-0.10	-0.10	**0.73**	0.05	-0.29	-0.13	-0.30	-0.14	-0.26	0.02
PSE1	0.39	0.15	0.18	0.13	0.12	-0.39	0.12	0.21	0.12	**0.86**	0.11	0.27	0.15
PSE2	0.29	0.14	0.19	0.08	0.08	-0.39	0.03	0.14	0.12	**0.88**	0.11	0.24	0.14
PSE3	0.32	0.11	0.18	0.13	0.12	-0.37	0.17	0.21	0.13	**0.88**	0.11	0.26	0.11
PSE4	0.28	0.14	0.17	0.17	0.17	-0.28	0.18	0.22	0.08	**0.85**	0.16	0.31	0.14
TRU1	0.32	0.81	0.68	0.61	0.61	-0.18	0.36	0.31	0.60	0.10	0.60	0.40	**0.81**
TRU2	0.18	0.88	0.52	0.56	0.56	-0.08	0.38	0.19	0.44	0.10	0.49	0.40	**0.90**
TRU3	0.22	0.87	0.52	0.54	0.53	-0.11	0.43	0.15	0.47	0.20	0.47	0.47	**0.93**
CLMTA	0.30	0.42	**0.67**	0.38	0.38	-0.14	0.18	0.24	0.43	0.23	0.50	0.34	0.42
CLMTA	0.36	0.45	**0.78**	0.52	0.52	-0.28	0.29	0.39	0.49	0.26	0.61	0.31	0.45
CLMTA	0.36	0.58	**0.79**	0.54	0.54	-0.17	0.36	0.32	0.57	0.17	0.60	0.41	0.58
CLMTA	0.35	0.41	**0.70**	0.49	0.50	-0.19	0.28	0.40	0.46	0.25	0.55	0.32	0.41
CLMTI	0.43	0.47	**0.81**	0.59	0.59	-0.28	0.33	0.50	0.51	0.14	0.86	0.39	0.47
CLMTI	0.32	0.53	**0.71**	0.82	0.83	-0.14	0.31	0.22	0.52	0.04	0.83	0.34	0.53
CLMTI	0.33	0.58	**0.86**	0.70	0.71	-0.29	0.40	0.40	0.63	0.18	0.91	0.41	0.58
CLMTF	0.33	0.52	**0.75**	0.66	0.67	-0.21	0.25	0.28	0.88	0.15	0.62	0.39	0.52
CLMTF	0.30	0.48	**0.61**	0.60	0.59	-0.17	0.30	0.32	0.80	0.09	0.49	0.45	0.48
CLMTF	0.25	0.45	**0.65**	0.44	0.45	-0.12	0.24	0.17	0.81	0.07	0.48	0.29	0.45
LEAD1	0.26	0.58	0.51	**0.73**	0.71	-0.17	0.33	0.22	0.42	0.22	0.51	0.38	0.57
LEAD2	0.32	0.53	0.71	**0.82**	0.83	-0.14	0.31	0.22	0.52	0.04	0.83	0.34	0.53
LEAD3	0.13	0.48	0.47	**0.71**	0.71	-0.06	0.23	0.15	0.49	0.08	0.44	0.22	0.47
LEAD4	0.26	0.41	0.66	**0.73**	0.73	-0.17	0.17	0.21	0.64	0.11	0.58	0.28	0.41
IT1	0.19	0.43	0.33	0.28	0.28	-0.19	0.78	0.33	0.30	0.09	0.34	**0.89**	0.43
IT2	0.17	0.41	0.33	0.29	0.29	-0.12	0.87	0.29	0.27	0.13	0.34	**0.90**	0.41
IT3	0.13	0.38	0.33	0.27	0.27	-0.05	0.88	0.25	0.30	0.02	0.32	**0.88**	0.38

	AKS	ATT	CLMT	INT	LEAD	PLP	OS	PBC	PRB	PSE	SN	IT	TRU
IT4	0.27	0.38	0.42	0.35	0.35	-0.11	0.82	0.26	0.31	0.21	0.40	**0.74**	0.38
AKS1	**0.84**	0.21	0.37	0.27	0.28	-0.26	0.15	0.28	0.26	0.27	0.36	0.43	0.21
AKS2	**0.69**	0.09	0.22	0.18	0.18	-0.12	0.07	0.17	0.13	0.22	0.22	0.33	0.09
AKS3	**0.65**	0.27	0.27	0.20	0.21	-0.12	0.17	0.25	0.19	0.23	0.26	0.46	0.27
AKS4	**0.86**	0.17	0.38	0.22	0.22	-0.29	0.14	0.39	0.32	0.29	0.32	0.37	0.17
AKS5	**0.87**	0.27	0.43	0.32	0.32	-0.37	0.17	0.38	0.36	0.39	0.38	0.43	0.27
AKS6	**0.88**	0.27	0.44	0.37	0.37	-0.34	0.21	0.39	0.37	0.32	0.40	0.47	0.27

5.1.8 Assessment of the Structural Model

After fitness of the measurement model was established, the structural model was assessed and hypotheses were verified. The structural model specifies the relations between the latent constructs in the model. Assessment of the structural model was done first by defining the predictive power of the model and second by examining the theorized relations between the latent constructs the model. The R-square (R^2) value of the dependent variables defines the predictive power of the model and the path coefficients evaluate the strength of the theorized relations.

Validation of the structural model was accomplished by using SMART PLS version 3.0. The model was prepared in SMART PLS as per PLS guidelines. Missing data was substituted with a “-1”. Next, bootstrap resampling method (200 iterations) that used randomly chosen subsamples was employed to estimate the conceptual framework and theorized relations (Chin, 1998). The sample size of 257 exceeded the recommended minimum of 10 times the number of antecedent constructs leading to an endogenous construct (Barclay et al., 1995). The outcome of the PLS graph output is provided in figure 20.

The R square value (R^2) in a structural equation model measures the amount of variance in the dependent variable that an independent variable explains. As a rule of thumb, this R square value for endogenous variables should be higher or equal to 0.10 (Falk and Miller 1992). The R^2 values, path coefficients, t values and the significance values are presented in table 34.

As illustrated in figure 20, the model has high predictive power. It explains approximately 21% of the variance in the actual KS, 71% of the variance in the intention to share knowledge, 86% of the variance explained by subjective norms and 37% of attitudes towards knowledge-sharing. The overall fitness of the model was good. Additionally, eight out of eleven paths were found to be statistically

significant. The standardized path coefficients ranged from 0.24 – 0.67. The overall fit of the model was good.

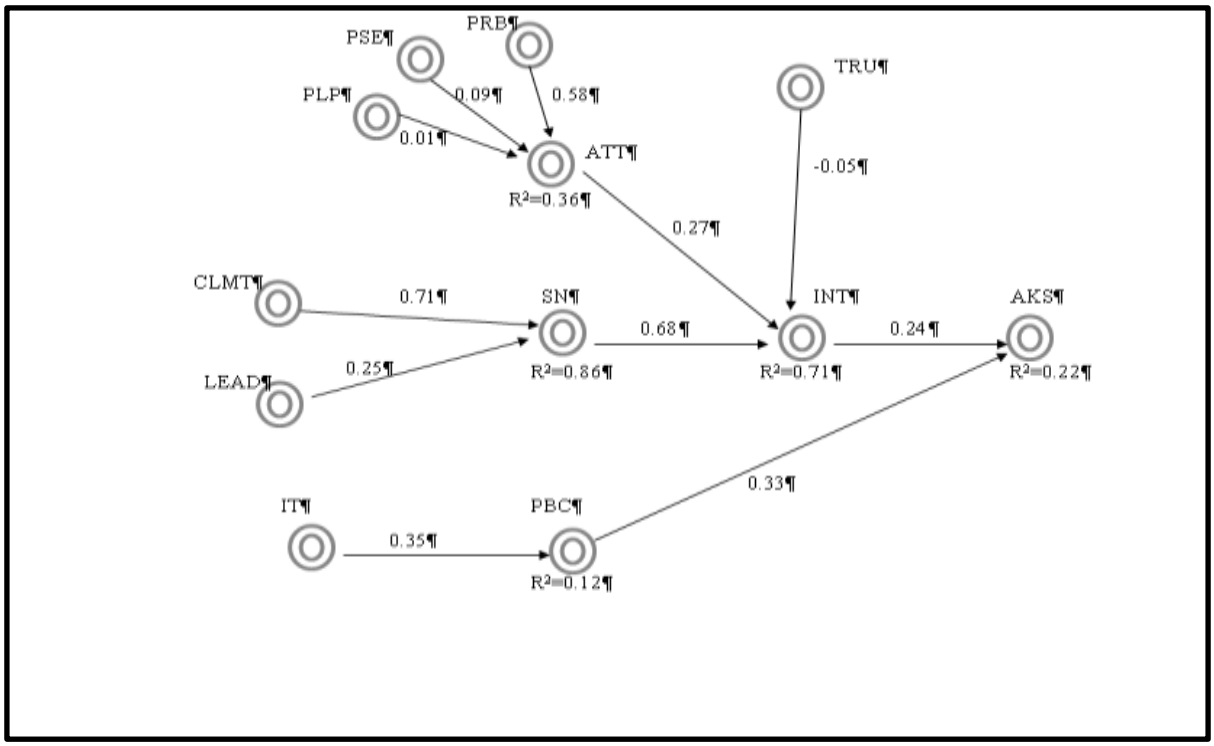

Figure 20. Results of PLS Analysis

Table 34 Summary of R Square, Beta Coefficient, t and P Values

Construct		R^2	Beta Coefficient	t Value	*p*
INT		0.71			
	ATT		0.27	5.45	0.00
	SN		0.69	16.34	0.00
	TRU		-0.05	1.16	0.24
ATT		0.36			
	PRB		0.58	13.68	0.00
	PSE		0.09	1.54	0.12
	PLP		0.01	0.14	0.89
SN		0.86			
	CLMT		0.73	22.02	0.00
	LEAD		0.28	7.15	0.00
PBC		0.13			
	IT		0.35	5.38	0.00
AKS		0.22			
	INT		0.25	3.80	0.00
	PBC		0.33	6.01	0.00

Construct		R^2	Beta Coefficient	t Value	*p*
INT		0.71			
	ATT		0.27	5.45	0.00
	SN		0.69	16.34	0.00
	TRU		-0.05	1.16	0.24
ATT		0.36			
	PRB		0.58	13.68	0.00
	PSE		0.09	1.54	0.12
	PLP		0.01	0.14	0.89
SN		0.86			
	CLMT		0.73	22.02	0.00
	LEAD		0.28	7.15	0.00
PBC		0.13			
	IT		0.35	5.38	0.00
AKS		0.22			
	INT		0.25	3.80	0.00
	PBC		0.33	6.01	0.00

5.1.9 Confirmation of the Hypotheses Testing

Every relationship or path in the proposed structural model visualized by a link was a proposition to be tested for this study. There were 11 hypotheses to be validated. Testing of these hypotheses took place by examining the strength, significance or insignificance of all suggested relationships using PLS and SEM. The strength of each path was tested by PLS by calculating the Beta value (β). A bootstrapping test was used to test for the significance or insignificant of every proposition.

The study hypotheses were verified by analyzing the path weight of each relation. The standardized estimation, critical ratios and p-value were used to test all 11 hypotheses for the existing study. Critical ratio (t-value) was calculated by dividing the regression weight estimate by Standard Error (SE). A relationship was accepted when a t-value exceeded the threshold of 1.96 with a p-value of (≤.05). Path estimates for the 11 hypotheses in the current study are outlined in table 35. The findings illustrate that eight paths are significant as the t-values > 1.96 and the p-value is ≤ .05.

Table 35 Hypotheses Testing Results

Path	Hypotheses	Significant at (T > 1.96) (P ≤ 0.05)	Path Weight Beta	SD	Overall Results	Supported?
INT→AKS	HI	T (3.80 > 1.96) P (0.00≤ 0.05)	0.24	0.06	Significant	YES
PBC→AKS	H2	T (6.01> 1.96) P (0.00≤0.05)	0.33	0.05	Significant	YES
SN→INT	H3	T (16.34> 1.96) P (0.00≤0.05)	0.69	0.04	Significant	YES
ATT→INT	H4	T (5.45> 1.96) P (0.00≤ 0.05)	0.27	0.05	Significant	YES
TRU→INT	H5	T (1.16<1.96) P (0.24> 0.05)	-0.04	0.04	Not Significant	NO
PRB→ATT	H6	T (13.68 > 1.96) P (0.00≤ 0.05)	0.58	0.05	Significant	YES
PSE→ATT	H7	T (01.54 < 1.96) P (0.12>0.05)	0.08	0.05	Not Significant	NO
PLP→ATT	H8	T (0.14<1.96) P (0.89> 0.05)	0.01	0.11	Not Significant	NO
CLMT→SN	H9	T (22.02 > 1.96) P (0.00≤ 0.05)	0.73	0.03	Significant	YES
LEAD→SN	H10	T (7.15 > 1.96) P (0.00≤0.05)	0.28	0.04	Significant	YES
IT→PBC	H11	T (5.38> 1.96) P (0.00≤ 0.05)	0.35	0.06	Significant	YES

H1: This hypothesis is supported. *Intention to share knowledge between academics will lead to greater actual sharing of knowledge* is supported, since β=0.34, t=6.18 and p<0.05.

H2: This hypothesis is supported. *There is a significant relationship between academic's perceived behaviour control and his/her actual knowledge-sharing behaviour*, since β=-0.10, t=2.36 and p<0.05

H3: This hypothesis is supported. *The subjective norm has a significant effect on academic's intention to share knowledge*, since β=0.69, t=14.44 and p<0.05.

H4: This hypothesis is supported. *A more positive attitude towards knowledge-sharing will lead to greater intention to share knowledge*, since β=0.27, t=5.61 and p<0.05.

H5: This hypothesis is **not** supported. *Interpersonal trust has no significant relationship with academics' intention towards knowledge-sharing* since β=0.10, t=1.41 and p>0.05.

H6: This hypothesis is supported. *Perceived reciprocal benefits have a significant relationship with attitudes of academics toward knowledge-sharing sharing*, since β=0.54, t=10.67 and p<0.05.

H7: This hypothesis is **not** supported. *Perceived knowledge self-efficacy does not have a significant relationship with academics' attitude toward knowledge-sharing* since β=0 08, t=1.34 and p>0.05.

H8: This hypothesis is **not** supported. *Perceived loss of knowledge power does not have a significant relationship academics' attitudes towards knowledge-sharing*, since β=0.04, t=0.35, and p>0.05.

H9: This hypothesis is supported. *Organizational climate characterised by fairness, innovativeness and affiliation has a significant relationship with academics' subjective norm towards sharing knowledge*, since β=0.73, t=23.18 and p<0.05.

H10: This hypothesis is supported. *HEI Leadership style has a significant relationship with subjective norm of academics towards intention of knowledge-sharing behaviour*, since β=0.28, t=6.91 and p<0.05.

H11: This hypothesis is supported. *Technology and KM tools have positive effect on academics' knowledge-sharing Perceived Behavioural Control towards knowledge-sharing*, since β=0.36, t=6.52 and p<0.05.

5.2 Chapter Summary

The current chapter showed that 257 valid surveys were considered for this study. The present thesis used SPSS version 2.0 software to analyze and present descriptive statistics of study constructs including demographic profile of participants. The present study used SMART PLS version 3.0 to carry out structural equation modelling. A structural equation model was performed in two phases: (1) the measurement model and (2) the structural model as suggested by Hair et al. (2006).

The current research validated the measurement model through the following phases suggested by Hair et al., (2006): (1) indicator reliability, (2) internal consistency, (3) convergent validity, and (4) discriminant validity. The results of the assessment underlined the suitability of the measurement model, and the construct validity was above the recommended threshold. The current study performed a structural model and hypotheses validation. The outcomes revealed that eight hypotheses suggested in the study are accepted. In chapter six, these findings will be discussed in the context of previous studies.

6.0 CHAPTER SIX – DISCUSSION

6.1 Introduction

The objective of this research study was to improve our understanding of the factors affecting academics' knowledge-sharing in HEIs in light of emerging higher education trends like globalization, privatization and open source research sharing movements. The distinctive features of HEIs in terms autonomy, academic leadership, and settings also substantiated this understanding. Based on the review of existing literature, this study categorized factors that would influence KS in HEIs under individual, organizational and technological elements. In order to examine the impact of these factors on academics' KS behaviours, the Theory of Planned Behaviour framework (TPB) by Ajzen (1991) was applied for this study to develop and examine comprehensive and integrated model to identify those determinants. In this chapter, the types of knowledge shared by academics are highlighted first, followed by results hypotheses testing and synthesis in light of existing literature.

6.2 Types of Knowledge Shared by Academics

Questionnaire respondents indicated that academics in HEIs share all types of knowledge at different levels. Teaching and learning related knowledge were shared more frequently followed by academic research knowledge. Social and procedural knowledge were shared less frequently. Fullwood et al. (2013) indicated similar findings. In the Fullwood et al. study, it was affirmed that knowledge related to learning, teaching resources, research information, and research activities were shared more than organizational and social knowledge among UK academics.

The findings of this study gathered support from the empirical results of Li et al. (2013) in which they suggested that academics easily share explicit knowledge in the form of course outlines and teaching slides. However, academic tacit knowledge in the form of how to teach a topic like art was found to be shared less frequently. Hence, it can be argued that academics in HEIs

share all types of knowledge. However, rationally teaching and learning types of knowledge might come forward in their thoughts when asked what types of knowledge they share more frequently than others do.

6.3 Hypotheses Testing

This segment briefly highlights the research hypotheses and debates the findings of each hypotheses in the context of previous literature. Table 35 in chapter five listed all 11 hypotheses that were examined by the current study in order to identify the factors that influence academics' KS behaviour. Details of each hypotheses are presented in the next sections.

The findings from the statistical analysis of the data generated by survey respondents provided empirical support of the proposed model. Eight hypotheses were accepted out of the total 11 hypotheses proposed by this study. The results indicate that the significant predictors of KS behaviours are TPB elements including intention, attitude, subjective norm and perceived behaviour control. Independent factors included academics' perceptions of reciprocal benefits, organizational climate (affiliation, innovativeness, fairness), and HEIs leadership. Having KM tools and IT available to facilitate knowledge-sharing are substantial predicators of KS behaviour among academics in HEIs. By contrast, perception of loss of knowledge power, perception of self-efficacy, and interpersonal trust were insignificant drivers of academics' knowledge-sharing behaviour. Joint attitudes and subjective norms described about 71 percent of the variance in the intention to share knowledge, while intention together with PBC explained a 22 percent variance in the actual knowledge-sharing behaviour.

Several empirical findings in this study were consistent with previous knowledge-sharing studies in the commercial sector (Abzari & Abbasi, 2011; Bock & Kim, 2002; Bock et al., 2005; Chennamaneni et al., 2012; Lin et al., 2004; Ryu et al., 2003) and higher education sector (Fullwood et al., 2013; Kim and Ju, 2008; Nordin, et al., 2012; Rowley, 2000; Sohail & Daud, 2009). However, large number of these studies were conducted largely in Malaysian universities with homogenous staff. Although the populations were not

homogenous with the populations in the current study, the results were similar suggesting that knowledge-sharing is the key factor rather than culture. In contrast, other findings like the insignificant of interpersonal trust among academics and its relationship with knowledge-sharing were not consistent with previous literature (Ayalew et al., 2013). The findings related to the individual, organizational and technological predictors with respect to their hypotheses are discussed in detail next.

6.3.1 Antecedents of Actual Knowledge-sharing

Intention to share knowledge is precondition of actual knowledge-sharing behaviour (Ajzen, 1991). Several studies explored the effect of intention on actual knowledge-sharing behaviour (e.g. Bock et al., 2005; Chennamaneni et al., 2012; Goh & Sandhu, 2013; Tohdidin & Moskhani, 2010). Goh & Sandhu (2014) indicated that behavioural intention is a good indicator of executing the targeted behaviour. Similarly, Chennamaneni et al., (2012) suggested that behavioural intention is the primary determinant of carrying out the actual sharing of knowledge. This study proposed that intention to share knowledge between academics leads to greater actual sharing of knowledge (H1). The empirical findings of this study revealed a positive significant path coefficient of $\beta = 0.27$, $t > 1.96$ and $P \leq 0.05$, hence accepting hypotheses (1). As theorised by Ajzen (1991), this finding suggests that the higher the intention of academics towards knowledge-sharing the more likely they are to engage in sharing activity. Collectively, intention and PBC explained 22 percent of the variance in actual knowledge-sharing behaviour. This study empirically confirms Ajzen (1991).

While Othman & Skaik (2014) found that intention explained 27 percent of variance in actual knowledge-sharing, this study indicated slightly smaller variance at 22 percent. One potential explanation of the different results is that the Othman & Skaik (2014) study did not consider a relationship between PBC and actual knowledge-sharing behaviour. Consequently, intention explained the higher variance. This finding suggest that academics in higher education would more likely to engage in knowledge-sharing if they have higher intention and more controllability on the resources needed to perform the behaviour.

Jolaee et al. (2014) claimed that low variance (11 percent) was explained by intention. One possible reason of the different in results is that the Joalee et al. (2014) study applied Theory of Reasoned Action (TRA), while this study applied Theory of Planned Behaviour, which is an extension of TRA (Ajzen & Fishbein, 1975). TPB has an additional construct, which is Perceived Behaviour Control. PBC normally increases intention accounted variance in actual behaviour (Chennamaneni et al., 2012).

Perceived behavioural control (PBC) is defined as "the perceived ease or difficulty of performing the behaviour and it is assumed to reflect past experience as well as anticipated impediments and obstacles" (Ajzen, 2005, p. 111). This determinant reflects the controllability of an individual either to act or not to act in a specific behaviour. Several studies have examined the role of PBC on actual knowledge-sharing behaviour (e.g. Ajzen 1991, Taylor et al. 1995b, Pavlou & Fygenson 2006; Chennamaneni et al., 2012). This study has proposed that there is significant relationship between academic's perceived behaviour control and his/her actual knowledge-sharing (H2). The empirical results of this study revealed positive path coefficient of $\beta = 0.33$, $t > 1.96$ and $p \leq 0.05$, therefore supporting hypotheses (2). The finding of this study thus suggests that the greater the academics' level of control and competency over his/her knowledge-sharing capabilities, the more likely to actually engage in knowledge-sharing. This finding is consistent with TPB framework where it identified PBC as key determinant actual behaviour (Ajzen, 1991). The finding of this received support from Chennamaneni et al., (2012) that found positive relationship between PBC and actual knowledge-sharing behaviour among US knowledge workers. In their study, Pavlou & Fygenson (2006) showed PBC to have significant predicting power of actual sharing behaviour. The results of this study are further consistent with previous studies. It can be argued that despite the social references in academics in HEIs, they are highly motivated to engage in knowledge-sharing activities to the extent that they believe that time, resources and opportunities permit them to do so.

6.3.2 Antecedents of Knowledge-sharing Intention

In line with TPB, the existing study hypothesized the predictors of KS intention are attitude and subjective norm towards KS. According to TPB, the higher the intention to practice certain behaviours, the higher the likelihood that they will engage in the activity of that behaviour (Ajzen, 1991). As expected and compatible with the framework of TPB, attitude, subjective norm and interpersonal trust emerged as significant predictors of academics' intention towards knowledge-sharing (H3, H4, H5). These findings received support from the TPB related research in other organizational contexts (Bock & Kim, 2002; Bock et al., 2005; Chen et al., 2009; Jeon et al., 2011; Ryu et al., 2003; Shanshan, S, 2013; Tohidinia & Mosakhani, 2010) and studies in HE sector (Babalhavaeji & Kermani, 2011; Goh & Sandhu, 2013; Jolaee et al., 2014; Othman & Skaik, 2014; Tan,2015). Detailed synthesis of the intention towards knowledge-sharing in reference to prior research is discussed next.

Ajzen and Fishbein (1975) believed that attitude had an influence on behavioural intentions. Attitude in this study was conceptualized as the degree of academics' positive or negative feelings about sharing knowledge. This relationship has received substantial empirical support from previous authors (Ajzen, 1991; Bock et al., 2005; Ryu et al., 2003; Tohidinia & Mosakhani, 2010). As grounded by TPB, this study has proposed that attitude has an impact on the intention to share knowledge (H4). The empirical results of this study revealed a path coefficient of 0.27, $t > 1.96$ and $p \leq 0.05$, therefore supporting hypotheses (4). The results of this study suggest that academics with positive attitudes towards KS would likely to engage in KS activities. This finding was in line with Ajzen (1991) TPB, where he explains that whether a person actually shares knowledge with others primarily depends on his or her personal attitudes. Additionally, Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA) supported this finding earlier where they suggest that there was a close relationship between attitudes and intentions. This finding was consistent with prior research.

The finding of this study also received support by previous research. For example, Bock et al., (2005) argued that the more positive attitudes of

employees, the higher the intention to share knowledge. The finding of this study was similar to Tohidinia and Mosakhani (2010) study, which indicated that positive attitudes towards sharing knowledge positively influence the intention to share knowledge on their sample. In their study, Fullwood et al. (2013) found that academics' positive attitudes towards knowledge-sharing were translated into stronger positive intention concerning knowledge-sharing. The results of the existing empirical studies are further consistent with prior studies and suggest that the more positive academics' attitudes towards knowledge-sharing, the more likely that they intend to share knowledge with colleagues at the HE level. The results of this study showed compatibility with the TPB suggested by Ajzen (1991) and tested by many scholars and practitioners (Bock et al., 2005; Joalee et al, 2014; Ryu et al., 2003).

A subjective norm is defined as a person's perception of whether people significant to the person think the behaviour should be performed (Ajzen and Fishbein, 1980). Subjective norms mirror the participant's feelings of whether the behaviour is accepted, stimulated, and applied by the participant's circle of influence. Prior research implied a positive relationship between subjective norm and intention to do the behaviour like sharing knowledge (Srite & Karahanna, 2006; Taylor, 2006; Venkatesh & Morris, 2000). This study has proposed that subjective norm has a significant effect on academics' intentions to share knowledge in HEIs. The empirical findings of this research indicate that subjective norms have an exceptionally substantial effect on intention with path coefficient of 0.70, $t > 1.96$, $p \leq 0.05$, hence supporting hypotheses (2).

This finding suggests that academics consider peer, management, deans' and program chairs' expectations of knowledge-sharing to be significant. This finding was consistent with theory of planned behaviour framework and previous TPB related studies (Goh & Sandhu, 2013; Nordin et al., 2012; Othman & Skaik, 2014; Srite & Karahanna, 2006). While Srite and Karahanna (2006) suggested that subjective norms are a determinant of accepting behaviours, Goh and Sandhu (2013) found that subjective norms carried out significant influence on academics' intention to share knowledge.

Contrary to expectation and not in line of the finding of this study, Jolaee et al. (2014) found no significant influence of subjective norm on intentions to share knowledge among academics in the Malaysian context. The authors attributed this unexpected finding to the nature of academic culture in Malaysia where social and peer pressure might not be considered as important when it comes to knowledge-sharing. Surprisingly, an earlier study among Malaysian academics and found a positive relationship between SN and intention to share knowledge (Goh & Sandhu, 2011). The empirical results of this study suggest that SNs have a substantial impact on academics' attitudes toward the intention to share knowledge in HEIs. The results of this study suggest that university management should focus on factors to enhance academics' subjective norms like organizational climate and leadership support.

In the context of this study, interpersonal trust was defined as the degree of trusting colleagues and their knowledge. The results of this study appear to reject the hypotheses that trust has a significant relationship with intention to share knowledge at weak positive path coefficient of $\beta = 0.05$, $t= 1.16$ and $p=0.24$. This finding is in contrast with previous studies, which identified interpersonal trust as an important factor driving knowledge-sharing activities among employees in the commercial sector. Von Krogh, Nonaka & Rechsteiner, (2012) observed that interpersonal trust is a prerequisite for knowledge-sharing.

Similarly, Kukko (2013) confirmed lack of trust between workers as an individual barrier to knowledge-sharing in software companies. Additionally, trust was mirrored to be a catalyst for knowledge-sharing by Casimir et al., (2012). Choi et al, (2008) concluded that trust is essential to facilitate knowledge-sharing among workers. However, Kim and Ju (2008) did not verify trust as a statistically significant relationship with faculty knowledge-sharing behaviour. The authors attributed their finding due to Korean social norms and value systems, which might have influenced the result.

This study found an insignificant relationship between interpersonal trust and intention to share knowledge, also consistent with the findings of the Joalee et al. (2014) study. They reported no statistical significance relation between trust

and intention to share knowledge. The authors warranted their findings due to the automatous nature of Malaysian academics. As for the result of this study, a potential reason that could explain absence of trust as a driver of academics' intention towards sharing in HEIs is that academics nowadays are assured acknowledgement and accreditation of research knowledge through several venues like the university's academic governance system, as well as research citation and publication tools (Jons & Hoyler, 2013). Interpersonal trust is not perceived as a driver to influence their decision to share academic knowledge with other academics.

The attitudes towards knowledge-sharing, subjective norm and interpersonal trust collectively explained about 71% of the variance in the sharing intention of academics, which is an exceptionally high variance compared to other studies (Goh and Sandhu; 2013; Tohidinia & Mosakhani, 2010).

6.3.3 Antecedents of Knowledge-sharing Attitude

Since attitudes are formed at the individual level, this study applied several independent individual drivers such as perceived reciprocal benefits, perceived self-efficacy, and perceived loss of knowledge power derived from previous literature. Of these factors, only perceived reciprocal benefits emerged as a significant predictor of academic's' attitude towards knowledge-sharing. The remaining factors were found not have significant influence on sharing attitudes of academics.

Individuals engage in social exchanges with expectation of that their contribution will result in reciprocal returns. Prior studies indicate that anticipated reciprocal relationships have a positive impact on favorable attitudes toward knowledge-sharing (Bock et al., 2005; Chennamaneni et al., 2012; Tohidinia & Mosakhani, 2010; Wasko & Faraj, 2000). For example, Wasko & Faraj (2000) suggested that reciprocity is a key motivator of knowledge-sharing among employees. One well cited article, Bock et al. (2005), found a positive influence between reciprocal benefits and knowledge-sharing.

The Bock et al. study proposed that perceived reciprocal benefits have a significant relationship with attitudes of academics toward knowledge-sharing sharing (H6). The results of the PLS analysis depict a strong coefficient path of β = 0.54 between PRB and ATT. This finding is supported by the social exchange theory and previous TPB related knowledge-sharing studies. Tohidinia and Mosakhani (2010) concluded that employees' assumptions about future relationships with other employees would improve their attitudes toward knowledge-sharing. Bock et al. (2005) found a positive relationship between reciprocal benefits and attitudes towards knowledge-sharing. A study by Chennamaneni et al. (2012) on knowledge workers found that reciprocity is a strong predicator of knowledge-sharing attitudes.

The result of this study was not consistent with the outcome of Tan (2015) research that found no statistically significant relationship of reciprocal benefits on knowledge-sharing in a study of HEI in Malaysia. One possible explanation of this inconsistency might be attributed to the lower value perceived by academics working at participated universities of reciprocal relationship. Another possibility is that academics may doubt the return of reciprocal benefits by other academics. It is worth noting that trust was among the supported factors in Tan's (2015) study. One potential reason that PRB was not significant in the study was the fact that when trust is valued by academics, reciprocal benefits lose their value. Therefore, the results of this study are consistent with previous studies and provide strong indications that academics in HEIs are likely to engage in knowledge-sharing with expectation of receiving future help from other academics in return of sharing knowledge with them.

Self-efficacy is referred to "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1997, p. 2). In this study, knowledge self-efficacy is referring to the "individual's *judgment of his capabilities to contribute to the organizational performance"* (Bock & Kim, 2002). Prior researchers (Joalee et al., 2014; Lin, 2007b; Olatokun & Nwafor, 2012; Wasko & Faraj, 2005) cited self-efficacy association with knowledge-sharing. Joalee et al. (2014) indicated that when

people believe that their knowledge would improve work activities, processes and productivity, they leaned toward sharing.

The current study has proposed that knowledge self-efficacy has a significant relationship with academics' attitudes towards knowledge-sharing (H7). Contrary to the hypothesized relationship, the empirical results of this study revealed a weak positive path coefficient of $\beta = 0.08$, $t < 1.96$ and $p > 0.05$, hence rejecting hypotheses (7). This result indicates that knowledge self-efficacy did not have a statistically significant relation with academics' attitudes towards knowledge-sharing in HEIs. Although knowledge self-efficacy had a significant correlation with attitudes, knowledge self-efficacy was not significant in the overall model. This finding suggests that academics' attitudes towards knowledge-sharing at HEIs is not driven or provoked by knowledge self-efficacy.

However, this result is similar to the Tan (2015) study that examined the influence of self-efficacy on knowledge-sharing behaviour among Malaysian academics and found no significant relation between self-efficacy and sharing behaviours. In contrast to the result of this study, Tan (2015) found a negative path coefficient between knowledge self-efficacy and knowledge-sharing compared to the fragile positive path coefficient (0.09) in this research.

Despite few agreements with the result of this study by other research, it is in variance with other previous studies. Bock and Kim (2002) concluded that when people think that their expertise can improve work efficiency and increase productivity, their attitude towards sharing knowledge would be changed. As a result, they will be more inclined to share knowledge with others. Joalee et al. (2014) concluded similar positive relationships on a study among Malaysian academics. One potential explanation of this contradiction is that academics do not receive sufficient feedback on their donation of knowledge by university management (Tan, 2015). Therefore, they might progressively develop low knowledge self-efficacy.

Another possible reason is that university management is not placing emphasis on the value of knowledge-sharing and focusing on management

related issues. The result also may imply that academics might have low knowledge self-efficacy due to perceived low competencies (Lin, 2007b). The finding of this study would require HEI management to strengthen their efforts to emphasize the importance of knowledge-sharing, its consequences on organizational and faculty performance, and implementation of consistent a knowledge feedback system to promote better knowledge-sharing culture.

Several authors indicated that giving up the knowledge someone has by sharing it with others would inhibit the individual from receiving the benefits associated with that knowledge (Bartol et al. 2009; Convery, 2011; Gray, 2001). As knowledge is considered a source of power, individuals may fear losing this power if that knowledge is shifted to others. The current study has proposed that perceived loss of knowledge power has a significant relation with academics' attitudes towards knowledge-sharing (H8) in the HEI context. Despite this proposition, perceived loss of knowledge power (PLP) had a weak positive path coefficient of $\beta = 0.4$. However, the relationship was not significant in the overall model at $t > 0.35$ and $p > 0.05$, hence rejecting hypotheses (8).

The results of this study revealed no significant relation between perceived loss of knowledge power and academics' attitudes towards knowledge-sharing. The insignificant relation between PLP and attitudes towards sharing knowledge implies that academics in HEIs did not believe that sharing their knowledge with others would make them lose their value or position within the institution. Moreover, loss of knowledge power did not drive academics' attitudes towards engaging in knowledge-sharing. One possible reason of this finding can be contributed to the autonomous nature of academics in HEIs. This finding is also consistent with previous research. Khalil et al., (2014) found negative relationships between PLP and attitudes towards sharing knowledge. They indicated that the more academics hold beliefs that sharing knowledge reduces their power within the institution, the less likely they are to engage in knowledge-sharing activities. This result is also consistent with prior research that highlights the influence of knowledge-sharing and distribution of power (Chennamaneni et al., 2012; Convery, 2011; Gray, 2001).

6.3.4 Antecedents of the Subjective Norm

In the context of this study, organizational climate described as “shared philosophies, ideologies, beliefs, feelings, assumptions, expectations, attitudes, norms, and values” (Lunenburg, 2011, p. 2), in this case within a HEI. It guides the employee’s behaviour by conveying to them what behaviour is appropriate and desirable. Subjective norms are usually formed when employees internalize and evaluate organizational values and norms.

The impacts of organizational climate on KS have been broadly studied in the commercial literature (Abzari & Abbasi, 2011; Bock et al., 2005; Chennamaneni et al., 2012; Connelly & Kelloway, 2003; Khalil et al., 2014) but was not examined in the context of HEI. Since organizational climate characteristics are closely related to that of culture, but take a rather the perspective of the individual participant (Schein, 1985), organizational climate signifies the perceptions and feelings of employees regarding their work environment in general. Organizational climate in the context of HEI would clarify academics’ perceptions of overall existing academic culture. In this study, organizational climate is depicted by three dimensions: perceptions of affiliation to the university, perception of innovation, and perceived fairness. These dimensions were theorized to have a significant relationship with academics’ subjective norm towards sharing knowledge (H9).

The empirical results of this study have found an exceptionally high positive coefficient of 0.73 (the highest among both independent and dependant factors), t= 22.58 (the highest), $p \leq .05$, hence supporting the hypotheses (9). Prior studies supported the finding of this study. Ajzen and Fishbein (1975) argued that external factors such as organisational climate could influence the subjective norms of individuals by cueing to them the desirable behaviour that is expected of them. This finding suggests that organizational climate has substantial influence on academics’ subjective norm towards sharing knowledge; it also indicates that affiliation to the university, innovativeness of the department and management fairness collectively would significantly influence academics’ subjective norms in HEIs. Together with HEI leadership,

they explained the highest percentage of variance in the model at 86 percent of subjective norm towards intention to share knowledge.

This finding was also in line with the results of Khalil et al. (2014) who indicated that the higher the perceptions of organizational climate conducive of KS, the higher was the formation of subjective norm towards KS behaviour. In their study, organizational climate explained a lower (20 percent) variance on subjective norm towards intention to share knowledge. Organizational climate strongly formed the subjective norm of knowledge workers on a study by Chennamaneni et al., (2012). Consistent with the well cited Bock et al. (2005) study; they indicated that an organizational climate conductive to knowledge-sharing, operationalized by fairness, innovativeness, and affiliation to organization positively influenced workers' intentions to share knowledge. They concluded that the subjective norm would directly affect intention and indirectly affect attitudes of knowledge workers.

Due to the role leaders play, they have an enormous impact on KM and knowledge-sharing practices within their organizations. Prior literature identified two key types of leaderships: transformational and transactional. As discussed in chapter three, there are many studies that discuss the role of transformational and transactional leadership styles on knowledge-sharing (Al Husseini & Elbeltagi, 2013; Bryant 2003; Politis, 2001; Ramayah & Effendi, 2011; Wickramasinghe & Widyaratne, 2012). Leadership was an important factor in the field of knowledge management. This study has proposed that HEI leadership style has a significant relationship with subjective norm of academics towards intention of knowledge-sharing behaviour (H10). The findings of this study revealed a positive path coefficient of $\beta = 0.28$, $t=7.15$ and $p=0.00$ and hence supports hypotheses (10).

This finding suggests that leadership behaviours are important in influencing the level of knowledge-sharing among academics in HEIs. This result is supported by Politis's (2002) argument that leadership behaviours are positively related to knowledge-sharing. Positive influence of supportive HEI leadership on the tendency of academics to share knowledge was also reported by Fullwood et al., (2014). Similarly, Connelly & Kelloway (2003)

found that management support characterised by leadership behaviour positively influenced knowledge-sharing culture. Likewise, Nguyen and Mohamed (2011) concluded that leadership style plays a positive role on knowledge-sharing behaviour; they suggested that a balance of transactional and transformational leadership styles is needed in order to create successful KM and KS culture.

In the context of Malaysian HE, Ramayah and Effendi (2011) pointed out that leadership style acted as a mentor to knowledge-sharing among academics. This reflected the importance of leadership in knowledge management in higher education. Despite the broad support received from prior research, Wickramasinghe and Widyaratne (2012) found no positive effect of team leadership on team knowledge-sharing in a software development company in Sri Lanka. Although this was not anticipated by the authors, they rationalized their finding because team members are dependent on colleagues more than their team leader. Another rational concern is the function of project teams, as they promote collaboration and interdependencies. Certainly, this is an area that could be explored in further research, perhaps research based on the current study but with a concentration on leadership and culture.

6.3.5 Antecedents of Perceived Behavioural Control (PBC)

The role of ICT to support the implementation of KM and knowledge-sharing programs has been well established and documented in the literature (Convery, 2011). In the context of commercial sector, several authors (Kanaan & Gharibeh, 2013; Riege, 2005; Seba et al., 2012) identified technology as a key factor to facilitate to knowledge management and knowledge-sharing programs. Despite the large number of studies focusing on knowledge-sharing in the commercial sector, limited studies are found in higher education. Based on previous evidence, this study proposed that technology and KM tools have a positive effect on academics' knowledge-sharing perceived behavioural control towards knowledge-sharing (H11).

The empirical results of this study revealed that technology which enabled knowledge-sharing has a strong positive relationship with perceived

behavioural control towards knowledge-sharing at strong beta coefficient of β = 0.35, t=5.38 and p=0.00. The results support hypotheses (11) as it exceeded the t-value and p-value which is above the minimum criteria of 1.96 and ≤.05. This finding suggests that academics are motivated to use tools and technology to share knowledge, to the level they have high perceptions regarding their availability and the ease of use of KM and IT tools. Additionally, IT as an independent factor explained about 13 percent of the variance in the perceived behavioural control towards actual sharing of knowledge.

This result is further supported by previous research of Chennamaneni et al. (2012) who examined the role of technological factors on knowledge-sharing behaviour on knowledge workers enrolled in business school classes. Chennamaneni et al. (2012) found a positive relationship between IT and PBC towards knowledge-sharing. They pointed that employees will use the technology for sharing in accordance with their beliefs about its ease of use and availability. Expectations placed on IT only to facilitate KS in absence of their suitability should be questioned (Riege, 2005).

However, in this study, the strength of the relationship indicated by the path coefficient (0.35) was moderately low comparted to other key components of the structural model. This may be considered somewhat surprising given the large access that academics at HEIs have to learning management systems (LMS), e-databases, virtual learning software, and groupware technologies. Despite universities' effort to make access to electronic databases available to academics for the purpose of knowledge exchange, results from the survey participants suggest that academics still prefer face-to-face communications followed by email as a medium of sharing knowledge. Hislop (2013) suggested that email is suitable for only explicit types of knowledge and not for implicit ones.

6.4 Synthesis and Reflections on the Findings

6.4.1 Demographics

In considering the outcome of the research, it was clear that the majority of the respondents were spread between the ages of 31 and 60. Any two ages groups combined would represent a significant portion of the respondents. The age of the respondents was in a modified bell curve form. See figure X. For statistical purposes this represents a good sample distribution of ages.

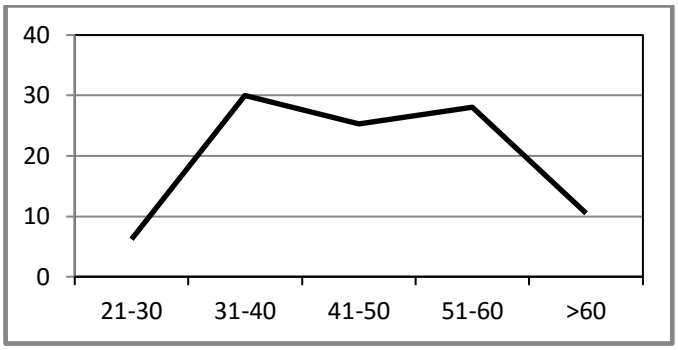

Figure 21. Graphical Distribution of Age Categories

The population surveyed contained more males than females, and more than half of the population was highly educated with a PhD or Doctorate; the total percentage of respondents holding Master's degrees and PhDs was nearly 98%. The distribution of age and education suggests that these respondents are experienced and highly educated in the field of general academic knowledge. The indication, then, is that the population of interest for the general topical area of knowledge management and knowledge-sharing was reached. Individual disciplines were well represented. The vast majority of the respondents (84.8%) had been at their universities 15 years or less. This demographic represents tenure. However, when overall teaching time was considered, only 66.2% of the respondents had been teaching 15 years or less. This suggests that a sizeable portion of the respondents (18.6%) had taught at other universities before ending up in their tenured positions. In terms of future research, this is a point of interest that might warrant future investigation, particularly given the nature of the research investigation.

Public universities had a somewhat higher rate of response than did private universities. When the total demographic was considered, the average respondent was slightly more likely to be male, slightly more likely to be working at a public university, to have been at their university for 15 years or less, have a Masters or PhD, and be between 31 and 60.

6.4.2 Individual Determinants

The literature strongly showed that intent leads to action (Ajzen, 1991). Although, this study revealed that attitude, subjective norm and interpersonal trust emerged as significant predictors of academics' intention towards knowledge-sharing (H3, H4, H5). Thus, it is of an interest to point out that only 66.5% of the survey respondents intended to share knowledge in the future. Delving into their attitudes further, 60% had an unencumbered intent to share knowledge, but an additional 6% would share knowledge if it could be shown that sharing the knowledge would benefit their university.

The literature clearly showed that sharing of knowledge is a productive activity both from the educational, psychological and business perspectives (Bock & Kim, Tohidinia & Mosakhani, 2010; 2002; Othman & Skaik, 2014). Thus, it is interesting that minority of the respondents, all highly educated individuals, believe that it is not a good practice to share knowledge. Similarly, 60% of the respondents did not think it was harmful to share knowledge with their colleagues, and slightly more (66%) felt that sharing knowledge was not a waste of time. The conclusion is that, at least in the surveyed population, there is a minority that might not be sharing knowledge. This supports the claim of some authors that knowledge hoarding is being practiced in academia (Rowley, 2002; Fullwood et al., 2013; Chugh, 2015). It is possible that the universities could make a rule or regulation that sharing of knowledge was required, but based on Social Economic Theory, Theory of Self Determination and Theory of Planned Behaviour, one's desire leads one's action.

According to the literature, the perception of reciprocal benefits in a social exchange can affect how people feel about that exchange. Lin (2007) stated that reciprocal behaviour could institute a sharing culture by inspiring faculty members to improve relationships and expect help from each other. This

section of the survey showed that majority of the respondents would expect others to share knowledge in a reciprocal exchange. Further, 73.5% believed that if they donated knowledge to a group or a colleague, the academics should respond in return. The respondents seemed to regard sharing of knowledge as a reciprocal benefit, in which the benefits could somehow be 'banked' for future collection. While Convery (2011) had suggested that the idea that there would be reciprocity could be motivation and would enhance the mutual relationship between individuals when it concerns knowledge-sharing, the results of this section suggest that Kankanhalli et al. (2005) were more accurate in their definition of reciprocity as future knowledge requests that will be met by others.

Perhaps the most significant knowledge factor gained in the sections of the survey that dealt with attitudes towards the sharing of knowledge was that only 60% of the respondents disagreed in some form with the idea that sharing knowledge with their colleagues is harmful. *The corollary is that, the remaining of these respondents believe or not sure that sharing knowledge with colleagues could be harmful*. Similarly, strong minority believed that knowledge-sharing is a waste of time, and feel that sharing knowledge is not a pleasant experience. It is important to realize that each demographic has a consequence; information can be approached from both positive and negative positions. It sounds better to say that 55% of the respondents feel that sharing knowledge is a positive experience, than to say that 45% feel it is a negative experience or even impartial. However, to have minority of the academics feel that sharing knowledge is a negative experience highlights an area of improvements needed in the academic environment. The results might indicate that there is some chance that an individual who attends university with the intent to get an education will encounter few instructors who do not wish to help other instructors.

The results regarding perception of control over behaviours revealed that in general, academics felt that they did have the tools to share knowledge. Only 7.8% actively disagreed with that concept, leaving the remaining 30.2% of the respondents without strong feelings one way or another. However, when asked whether or not they had the time to share information, 53% felt they did,

while 38% felt they did not and 9% did not have strong feelings either way. Forty percent of the respondents felt that sharing knowledge with their coworkers was not under their control. This would support previous findings that time played a significant role in determining the intention of individuals to share knowledge with colleagues (Riege, 2005; Sandhu et al., 2011)

Respondents were generally adamant that they were not concerned with the suggestion that they might lose power if they exchanged knowledge. Over 80.5% stated that if they shared their knowledge, they would not lose any value in their organization. They reported that sharing knowledge would not make them lose their power base, their unique knowledge, or other people's respect. The strength of the responses in this section may suggest that the academics truly feel strongly that they do not lose power when they share, but it might also reflect a strong emotional reaction to the question. This result is consistent with prior research that highlights the influence of knowledge-sharing and distribution of power (Chennamaneni et al., 2012; Convery, 2011; Gray, 2001). The responses however raise the question that if the respondents do not believe they will lose power, what could the respondents fear when considering sharing (as shown in previous questions). If not fear of power loss, what could motivate the refusal of knowledge-sharing? This would need to be examined further.

Perceived knowledge self-efficacy towards the sharing of knowledge was measured, with large majority (81%) of the respondents stating that they would donate knowledge if it benefitted the organization. The result of this study indicated that knowledge self-efficacy did not have a statistically significant relation with academics' attitudes towards knowledge-sharing in HEIs. Although knowledge self-efficacy had a significant correlation with attitudes, knowledge self-efficacy was not significant in the overall model. This finding was supported by the empirical findings of Tan (2015) in Malaysian universities. However, other studies indicated a positive and significant relationship in other sectors (Bock & Kim, 2002; Joalee et al, 2014).

Interpersonal trust was tested as well, with most of the academics responding that they had to trust colleagues before they could share knowledge with them.

Contrasted with this response was the indication that it was difficult to trust co-workers (17%), or that they found it easy to trust colleagues before they shared (75%). Again, this echoes findings in other areas of the survey, which have been split roughly on an 80/20 basis. Interestingly, when asked if academics trust each other in general, 72% said they did, but 12.1% remained neutral. With trust being such a strong factor in knowledge-sharing among academics, and other factors having a split of 80/20 or 75/25 percent, the implication of trust for academic sharing warrants further investigation.

6.4.3 Organisational Determinants

Organizational climate in the context of HEIs would clarify academics' perceptions of overall existing academic environment. In this study, climate is depicted by three elements: perceptions of affiliation to the university, perception of innovation, and perceived fairness. The majority of the respondents felt that, regardless of their personal beliefs, their managers encouraged or supported the sharing of knowledge to one degree or another. However, it is a very telling point that only a third of the respondents reported that they follow the university policy on knowledge-sharing in the institution to any degree. A small minority (17%) were either not sure or did not follow the policy. While 61.4% stated that they would follow their manager's decisions, even if they disagree with them, nearly 15% took a neutral position on this question. These respondents did not even wish to answer the question. It is evident that respondents did not generally want to give an opinion about their colleagues' opinions and policies.

Academics' affiliation to the university and discipline were investigated. The results, again, were split in a consistent manner. Department members reported they were closely tied to each other (68.1%), and 70% of the respondents felt they considered each other's opinions and held them in high regard (70%). Respondents indicated their coworkers were team players (68.1%), and majority of that academics were loyal to their own disciplines.

When a climate of innovation was explored, two thirds of the respondents felt that their department created new opportunities and rewarded creativity. Only

39.6% felt their institution took risks. This is in direct contrast with research that shows that innovation, creativity, knowledge and entrepreneurship are strongly linked with organizational risk-taking. In fact, 43.2% did not feel that their department any value on taking risks. Still, a small minority felt that their department encouraged the ability of knowledge workers to find new methods of doing things (61.4%). Over 29% disagreed with the idea that their organization wanted them to use creativity in completing their tasks. Again, the response is split consistent with responses in other areas, excluding perceived knowledge self-efficacy towards the sharing of knowledge.

In responding to the investigation of organizational climate in terms of fairness, one third believed that other academic staff received favorable treatment by managers. Correspondingly, 25.6% responded that they could not trust how their department heads acted (even though 63% felt they could). When asked if the objectives within the department are reasonable, 28.8% disagreed, while 73.5% agreed. Again, the split in the responses is fairly consistent.

The empirical results of this study have found an exceptionally high positive coefficient of 0.73 indicating significant impact of organisational climate (affiliation, innovativeness, fairness) on academics' subjective norms. Prior studies supported the finding of this study (Bock et al., 2005; Khalil et al., 2014). Ajzen and Fishbein (1975) argued that external factors such as organisational climate could influence the subjective norms of individuals by cueing to them the desirable behaviour that is expected of them.

Due to the distinctive role and functions leaders play in HEIs, they have an enormous impact on KM and knowledge-sharing practices within their institutions (Yang, 2007; Von Krogh et al., 2012). Prior literature identified two key types of leaderships: academic and managerial (Yielder and Codling, 2004). Investigation of the HEI leadership variable showed that nearly 60% of the academics believed their leadership had a strong sense of direction (59.5%), but 36.6% disagreed, with nearly 4% being undecided as to the direction of the leadership. The feeling of separation between the academics and the university managers was emphasized by the fact that 43.2% of the respondents felt that senior manager did not seek their opinions, while 39.6%

felt that the managers sought their opinion out. At the same time, 24.1% felt that senior management was not respected by the academics, while 66.5% believed that senior management was respected. Both of these response sets support very consistent responses through the course of the research. Undoubtedly, this is an area that could be explored in further research, perhaps research based on the current study but with a concentration on leadership and culture.

6.4.4 Technological Determinants

The role of ICT to support the implementation of KM and knowledge-sharing programs has been well established and documented in the literature (Convery, 2011). The use of tools and technology in knowledge management suggested that it was easy to use technology platforms to share knowledge (73%). However, 24.9% did not feel the platforms were reliable for use. Just over half the academics had fear of using technology for knowledge-sharing, even though they had reported the technology as easy to use. A small portion of the academics (13.2%) could not decide whether using the technology was easy or whether they were intimidated. However, majority of respondents agreed that they would use the technology, even though they were afraid of making mistakes. This is an important finding as it supports the concept of self-efficacy as support for positive action after decision-making in a knowledge-sharing environment.

Respondents preferred to share knowledge and information face to face (82.5%), and 73.6% confirmed that they also used emails. The high number of academics using e-mail as a sharing medium in this study could be explained by the climate, which demands a record of interactions among colleagues (Hislop, 2009), as well as the individual nature of academic research and teaching (Connelly & Kelloway, 2003). Slightly more than half of the respondents felt they did not use ‘knowledge repositories’ (i.e., online libraries or blackboards) for sharing knowledge, nor did they use video conferencing and chat rooms. However, nearly 14% of the respondents had no real opinion on this topic.

Less than half of the respondents reported that they shared knowledge frequently and in a positive manner with other academics (46%). Five percent reported that they shared infrequently. The majority of the respondents reported they did not use knowledge-sharing repositories; but they do share ‘tricks of the trade’, sharing a variety of knowledge frequently. Again, these responses are consistent with the survey responses found at the very beginning of the study.

However, when asked about specific types of knowledge shared, massive majority (92.3%) of academics shared teaching slides, course design and knowledge-delivery, while 80.9% shared general academic research knowledge. This response category suggests that academics may not be clear about the true meaning of sharing knowledge; consistently through the survey the academics indicated reluctance to share, with 20/80 or 25/75 split. Yet when specific knowledge-sharing types and methodologies were defined for the academics (teaching slides, designs for courses and active knowledge delivery) the percentage of academics responding positively rose. This did not hold true for the transmission of general academic research knowledge, which would indeed be consistent with the rest of the responses to this point. This finding suggests that academics are motivated to use tools and technology to share knowledge, to the level they have high perceptions regarding their availability and the ease of use of KM and IT tools.

6.5 Chapter Summary

In this chapter, the final structural model and hypothesized relationships were presented and discussed in conjunction with quantitative data and descriptive statistics. Contrary to expectation, individual factors such as perceived loss of knowledge power, interpersonal trust and perceived knowledge self-efficacy were found to have little or no influence on academics’ attitudes (and consequently intention to share knowledge) than organizational factors. Given the high level of autonomy enjoyed by academics and diversity in HEIs, this arguably indicates a strong desire by academics to donate their knowledge regardless of common reported individual barriers which were identified by other sectors.

Organizational factors like climate (affiliation, innovativeness, fairness) and HEI leadership support were found to be strongly related to academics' subjective norms and consequently to intention and actual knowledge-sharing behaviour. In this context, it can be argued that despite the characteristics of today's academics working at HEIs, perceived feelings of fairness, innovativeness and affiliation to the institution substantially determines academics' decision to participate in knowledge-sharing activities. Moreover, study results indicate that availability and user friendliness of IT and KM tools were found to be related to perceived behaviour control and consequently to actual knowledge-sharing. Respondents to the research questionnaire emphasized the critical importance of opportunities to share knowledge on a face-to-face basis. The next chapter considers the novel contribution of the research, along with implications for practice and research limitations.

7.0 CHAPTER SEVEN – CONCLUSION, CONTRIBUTIONS, LIMITATIONS, AND FUTURE RESEARCH

7.1 Introduction

This chapter focuses on providing a summary of the important areas that this study has covered. It revisits the research aim and objectives. It presents the research findings grounded on the research questions listed in chapter one. Next, it discusses the theoretical and practical contributions of this research followed by the limitations of this study. Finally, recommendations for future research are provided.

7.2 Meeting Research Aims and Objectives

The purpose of this study was identified in the introduction chapter as being an investigation of knowledge-sharing between academics in the context of HEIs. The goal was to suggest ways to improve this process. In order to accomplish the goal several objectives were developed. Table 36 indicates each objective and the chapters where the objectives were attained.

Table 36. Research Objectives

Objective	Chapters
Objective 1	Chapter 2
Objective 2	Chapter 3
Objective 3	Chapter 4 and 5
Objective 4	Chapter 6
Objective 5	Chapter 7

7.2.1 Objective 1 – Review of the Literature

Objective one of the research was to perform a detailed and critical review of the literature to examine the existing body of knowledge. In meeting this objective, a comprehensive and critical review of existing body of knowledge

underlined the need for the study. Chapter 2 provided a context for the study by exploring the literature pertaining to knowledge, knowledge management, knowledge-sharing, higher education trends and emerging challenges. Thereafter, determinants and antecedents in organisational knowledge-sharing behaviour and in HE sector were explored in light of the widely considered categories of individual, organizational and technological characteristics. Literatures of behavioural models were reviewed to inform the identification of behavioural antecedents that would influence and apply to academics to share their knowledge. Chapter 2 highlighted the significance of knowledge-sharing to HEIs, role of academics as knowledge creators and contributors. It also revealed that high level of autonomy continues to depict HEIs. Influencers discussed in relation to sharing knowledge in higher education to some extent echoed those in the commercial and public sectors. However, the impact of organisational climate emerged as particular characteristics of the sector along with the consequent of HEIs leadership. It also found from the literature that there are number of calls to further investigate knowledge-sharing management among academics from wider perspective and today's HEIs. This study recognised this need and suggested a KS conceptual framework to identify determinants that affect knowledge-sharing behaviour among academics in HEIs.

7.2.2 Objective 2 – Identify Antecedents of KS Behaviour

Objective 2 was to realize the research need and suggest conceptual model and hypotheses to identify antecedents of academics' KS behaviour. Chapter 2 and 3 highlighted the fragmented nature of examining KS determinants in HEIs and the need to comprehensively examine those influencers. The suggested conceptual integrated model outlined 11 hypotheses. The model was developed based on the Theory of Planned Behaviour, with antecedents driven from Social Exchange Theory and Self-Determination concepts. This chapter highlighted the significant and relevance of existed KS theories and presented the rationalization for all 11 hypotheses from previous studies.

7.2.3 Objective 3 –Assess KS Behaviours Using the Proposed Model

Objective 3 was to use the conceptual model to conduct quantitative based empirical query to assess academics' knowledge-sharing behaviour. Chapter 4 presented the methodology for conducting this research and provided a justification of its selected research philosophy, research approach and design. Thereafter in chapter five, this study presented the findings of the tested conceptual model based on the chosen methodology. It presented the results for descriptive analysis, reliability and validity test, model assessment analysis and structural model fitness using SMART-PLS tool.

7.2.4 Objective 4 – Examination of the Proposed Model

Objective 4 was to examine the experiential data generated from the questionnaire and validate the proposed model and hypotheses. Chapter 6 focused on examination of the results outlined in chapter five. It also examined the findings of each proposition and discussed them further in relation to existing studies. Chapter 6 provide critical discussions on the findings in the context of existing literature and presented detailed synthesis and reflections at the end of the chapter. The empirical results of the examination indicated that eight hypotheses were accepted and in line with existing literature and theories and the goodness and suitability of the SEM was well above the required threshold.

7.2.5 Objective 5 – Provide Implications and Recommendations

Objective 5 was to provide theoretical and pragmatic implications of the study findings, develop recommendations to enhance KS in HE sector, and to explore opportunities for future research. Chapter seven of this thesis ended the study by reviewing the aim and objective of the study, presenting the theoretical and pragmatic implications of the proposed model. Limitations and recommendations for further work were provided.

7.3 Research Findings

Given the distinctive autonomy, academic freedom, unique leadership, institutional climate and hierarchical settings of HEIs, they can only exacerbate the need to examine the challenges associated with managing knowledge-sharing in HEIs. The current study attained the aims and objectives in chapter one by proposing and examining a comprehensive yet parsimonious model that identifies antecedents which may affect KS behaviour among academics. The key focus of the model was to resolve the research queries proposed in chapter one. The theoretical model was verified through a survey of 257 academics in HEIs. Grounded on the research question, *What antecedents influence the process of KS between academics in HEIs, and how can the process of KS in HEIs be improved?,* the key findings of this research is as follow.

7.3.1 Antecedents of Intention, Attitude, Subjective Norm, & Perceived Behavioural Control

This research found that all TPB constructs have positive significant influence on academic's knowledge-sharing behaviour in HEIs context. As predicted by TPB, Intention to share knowledge is found to predict actual knowledge knowledge-sharing at positive path coefficient of $\beta = 0.25$, $t = 3.80$ and $p \leq 0.05$. The findings also showed that PBC has positive impact on actual knowledge-sharing and indicated positive path coefficient of $\beta = 0.33$, $t = 6.01$ and $p \leq 0.05$. Moreover, academics' attitudes found to have positive relationship with intention to share knowledge with $\beta = 0.27$, $t = 5.45$ and $p \leq 0.05$. Similarly, subjective norm showed exceptionally significant impact on academics' intention to share knowledge at $\beta = 0.70$, $t = 16.34$ and $p \leq 0.05$. SN path weight was the highest weight among all TPB constructs. This finding indicated that academics' perceived feelings of organizational climate characterized by perceived fairness, innovativeness, affliction to institution and leadership style had strong impact on academics' knowledge-sharing behaviour.

Contrary to expectation, this study found that interpersonal trust did not have a statistically significant relationship with academics' intention to share knowledge with low negative path coefficient of β = 0.05 and t = 1.16 and p > 0.05. This implies that academics in HEIs did not foresee trust as a driver of their decision to share knowledge with colleagues.

7.3.2 Influence of Individual, Organizational, & Technological Antecedents

The results of the PLS analysis illustrated a strong coefficient path of β = 0.54 between perceived reciprocal benefits and attitudes. This finding is consistent with social exchange theory and suggests strong indications that academics in HEIs are likely to engage in KS with expectation of receiving future help from other academics in return of sharing knowledge with them. University management should focus on encouraging academics to help their colleagues with their knowledge needs.

The results of this study revealed that perceived loss of knowledge power had no effect on academics' attitudes towards knowledge-sharing with low path coefficient of β = 0.01, t = 0.14 and p > 0.05. The insignificant relationship between PLP and attitudes towards sharing knowledge implied that academics did not believe that sharing their knowledge with others would make them lose their value or position within the institution. One likely reason of this finding can be contributed to the autonomous nature of academics in HEIs.

This research found no relationship between perceived knowledge self-efficacy and attitudes of academics with β = 0.09, t = 1.54 and p > 0.05. This result suggested that academics' attitudes towards knowledge-sharing in HEIs is not driven or provoked by knowledge self-efficacy.

This research found that organizational climate operationalized by perceived fairness, perceived innovativeness and perceived affiliation to institution have a very strong relationship with academics' subjective norm towards knowledge-sharing with β = 0.73, t = 22.02 and p≤0.05. This finding suggests that organizational climate has substantial influence on academics' subjective

norm towards sharing knowledge intention and consequently knowledge-sharing behaviour.

The results of this study revealed that HEI leadership had positive influence on attitudes at β =0.28, t=7.15 and p≤0.05. This finding suggests that leadership support is important in influencing the level of knowledge-sharing among academics at higher education institutions.

In light of the above, this study revealed that organizational factors were stronger predictors of academics' knowledge-sharing than individual or technological ones.

The findings of this research indicate strong positive relationship between IT and KM tools and academics' perceived behaviour control at positive path coefficient of β = 0.35, t = 5.38 and p ≤ 0.05. This finding suggests that the academics are motivated to use tools and technology to share knowledge, given that they observe their availability and ease of use of technology tools.

7.3.3 Knowledge-sharing and Communications Channels

Questionnaire respondents indicated that academics in HEIs share all types of knowledge with different levels. However, teaching and learning were shared more frequently, slightly before academic research. The results indicate that procedural and social knowledge were share less frequently by academics.

Face-to-face communication channel was selected by 82 percent of the survey participants as the preferred method for sharing knowledge and information. Exchanging e-mails as a knowledge-sharing channel came second with 73 percent of survey respondents.

Discussion forums, e-bulletins, electronic knowledge repositories, and video conferencing received very low scores averaging mean of 2.3. This is surprising given HEI efforts to make all academics have access available to these communications and KM channels.

7.4 Theoretical Contributions

Considering the various HEIs features discussed in chapters two and three including autonomy, institutional climate, academic freedom, HEI leadership, and settings, there were an amble need to examine knowledge-sharing in HEIs. This study has contributed to the field of knowledge management and knowledge-sharing by developing an integrated conceptual framework to assess knowledge-sharing behaviour among academics in HEI context. It also examined the critical influence that HEI leadership has on academics' KS behaviours and practices.

Chapters 2 and 3 highlighted the fragmented nature of examining KS determinants in HEIs and the need to comprehensively examine those influencers. It is evident from the literature that there is a need to further study knowledge-sharing behaviour in the HE sector (Fullwood et al., 2014; Kim & Ju, 2008). This study expanded previous research by outlining a set of comprehensive individual, organizational, and technological elements that are likely to affect KS behaviours and provide empirical support regarding the influence of these elements in the HEI context.

This study offered an integrated theoretical model that employed the well-cited TPB and supplemented it with constructs from other existing KS theories, thus strengthening the theoretical base. Moreover, the study's findings provide a robust model for intention based KS behaviour (Bock et al., 2005; Chennamaneni et al., 2012; Joalee et al., 2014; Othman & Skaik, 2014). Due to the exhaustiveness of the antecedents identified, the variables explained about 71 percent of the variance in KS intention.

7.5 Practical Contributions

From the practical perspective, it is evident from this research that universities have knowledge supporting climate, and KS is practiced in many fronts in different ways. However, it is also apparent that the process of managing KS can be augmented.

- Academic managers and department leaders must promote coherent programs to encourage internal and external knowledge collaborations in light of increased internationalization of higher education sector and academics' mobility.
- As face-to-face communication was revealed by this study as the preferred method of sharing and communicating, academic managers must encourage meetings and conference-attendance to share good teaching and research practices and activities.
- University leaders must promote knowledge-sharing programs by instituting adequate KS and KM policies and procedures to encourage and support knowledge-sharing climate.
- Despite the huge efforts and investments in IT and KM tools by higher learning institutions, this study unexpectedly found that low numbers of academics utilize electronic knowledge repositories, e-bulletins, video conferencing for locating or sharing knowledge. Therefore, university managers should improve the level academics' perceptions of the value of facilitating systems and tools by implementing fit for purpose, user-friendly systems, and providing continuous and adequate training.
- The results of this study indicated reciprocity has great influence on academics' attitudes towards sharing knowledge. University managers should institute organization-wide programs emphasising the value of collaboration and helping other academics, especially junior ones, with their knowledge needs.
- The findings of this study suggest that academics' attitudes are strong predictors of intentional behaviour and actual sharing of knowledge. University officials should promote positive attitudes towards sharing behaviours by addressing some academics' fear of losing knowledge power and by reassuring their position and value in the institution.
- This study suggests that KS is highly social. Thus, academic managers should develop continuous knowledge-sharing initiatives that enrich altruistic and pro-social behaviours among academics.
- The results of this study indicate that organization climate and HEI leadership had a strong influence on academics' subjective norm.

Academic managers and department leaders should visibly demonstrate their support and commitment to promoting knowledge-sharing behaviours and value of sharing knowledge internally and externally.

- In light of the rapid changes in knowledge technology as well as student and scientists' mobility, the findings of this study supports the increased calls for diversifying knowledge-sharing programs in universities and colleges by instituting open-source publications and taking advantage of the Massive Open Online Courses (MOOC) movement. These growing movements are dedicated to sustaining the competiveness of the institution, and promoting KS, academic research, and collaboration among global scientists. Academic managers should strive to adopt these approaches in order to survive in the higher education market.

7.6 Research Limitations

Every study deals with some kind of limitations caused by either reasonable choices, limited resources, or imperfections. The limitations of this study are addressed in this section.

The results of this study were based on a total of 257 valid surveys which was more than adequate for SPSS (version 20) analysis (Pallant, 2010) and acceptable for SMART PLS (version 3.0) and SEM measurement (Tabachnich & Fidell, 2001). The small number of valid surveys was due to the low participation rate by academics, as well as the limited time and resources available for this study. Nevertheless, SMART PLS handles modest sample sizes and generates accurate and valid results for SEM analysis. Future research should attempt to examine the conceptual framework using a larger sample size, which may have more statistical power and enable the use of different SEM tools.

Non-probability convenience sampling was employed rather than a stratified approach. Again, this was due to the low participation rate identified during the pilot study. The limitation concerning non-probability sample relied on its ability to assure generalizability of findings. However, convenience sampling is

widely used in business research because of the costs and difficulties generated by probability sampling (Bryman & Bell, 2014). Authors like Wellington (1996) argued that convenience sampling could help to accomplish research that would not otherwise be possible due to lack of subject accessibility, time, and resources. Future research can consider probability sampling technique to collect data.

The conceptual model developed by this study was examined quantitatively by using self-administered surveys. The limitation of this method is that it restricts the ability to have an in-depth view and observation of academics and their views on what would influence their knowledge-sharing behaviour. Although the author of this study made every effort to assure that respondents were asked objectively about their perceptions on behavioural measures in the survey. However, future research can further validate the conceptual model qualitatively (e.g. action research and/or case studies) using multiple methodologies including interviews or focus groups to triangulate the study findings and gain greater understanding on academics' in-depth views.

As the results from this study drawn from a single method, the limitation could leave open possibility for common method bias. However, as the focus of this study is to understand academics' knowledge-sharing behaviour working at widely spread HEIs, using multiple methods would be impractical and have limited benefit.

This study adopted self-reported online surveys to collect data from participants due to available time, resources, and practical concerns. The limitation of this method is that it is tainted with response bias. Some behavioural studies found that self-reported behaviours were found to be fairly accurate (Jaccard et al., 2002). Moreover, this study employed a seven-point frequency scale to record perceptual behaviour measures. Using a seven-point Likert-style scale is believed to mitigate bias associated with self-reporting.

7.7 Recommendations for Future Research

The study focused on comprehensive and integrated factors informed by the literature and behavioural theories of knowledge-sharing among academics. The results of this research explained part of the variance on actual knowledge-sharing behaviour (the dependent variable). Future research could add other constructs that would influence academics' knowledge-sharing. Personal traits, organizational structure, national culture, reputation, emotional factors, intrinsic and extrinsic motivations, could be added to the research model to explore their impact on academics' knowledge-sharing behaviour. The feeling of separation between academics and the university leadership was underlined in this study. Certainly, this is an area that could be explored further. Perhaps research based on the current model but with a focus on academic leadership. Given the scope of this research towards holistically understanding the behavioural aspects related to KS among academics, utilising the type of knowledge as a control variable was not included in this study. However, future work can benefit from considering the impact of type of knowledge as a control variable on academics' KS practices in HEIs.

Due to the rise and importance of 'world class' associated with university rankings, further research could focus the impact of knowledge-sharing on organizational performance characterised by research output, innovation, and world university ranking. Future research could also examine the impact of open source publication on knowledge-sharing performance among academics in HEIs.

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APPENDIX A – ETHICAL APPROVAL

College of Business, Arts and Social Sciences Research Ethics Committee
Brunel University London
Kingston Lane
Uxbridge
UB8 3PH
United Kingdom

www.brunel.ac.uk

10 September 2015

LETTER OF APPROVAL

Applicant: Mr Osama Ali

Project Title: Knowledge Sharing Among Academics in HEIs

Reference: 0165-LR-Sep/2015-39

Dear Mr Osama Ali

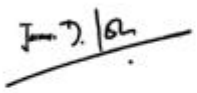
The Research Ethics Committee has considered the above application recently submitted by you.

The Chair, acting under delegated authority, is satisfied that the amendments accord with the decision of the Committee and has agreed that there is no objection on ethical grounds to the proposed study. Approval is given on the understanding that the conditions of approval set out below are followed:

- The agreed protocol must be followed. Any changes to the protocol will require prior approval from the Committee.

Please note that:

- Research Participant Information Sheets and (where relevant) flyers, posters, and consent forms should include a clear statement that research ethics approval has been obtained from the relevant Research Ethics Committee.
- The Research Participant Information Sheets should include a clear statement that queries should be directed, in the first instance, to the Supervisor (where relevant), or the researcher. Complaints, on the other hand, should be directed, in the first instance, to the Chair of the relevant Research Ethics Committee
- Approval to proceed with the study is granted subject to receipt by the Committee of satisfactory responses to any conditions that may appear above, in addition to any subsequent changes to the protocol.
- The Research Ethics Committee reserves the right to sample and review documentation, including raw data, relevant to the study.
- You may not undertake any research activity if you are not a registered student of Brunel University or if you cease to become registered, including abeyance or temporary withdrawal. As a deregistered student you would not be insured to undertake research activity. Research activity includes the recruitment of participants, undertaking consent procedures and collection of data. Breach of this requirement constitutes research misconduct and is a disciplinary offence.



Professor James Knowles

Chair

College of Business, Arts and Social Sciences Research Ethics Committee
Brunel University London

APPENDIX B – FINAL SURVEY

Introduction

First, I would like to thank you for your time and sincere effort in participating in this survey. This study attempts to study the factors influencing academics' knowledge sharing behaviour in higher education institutions.

The questionnaire consists of **26 questions,** it is divided into four parts: the first asks about general demographic data**,** the second is about knowledge sharing, the third is about tools and technology and the fourth is about knowledge sharing behaviour. The survey will take approximately **20 minutes or less.**

This questionnaire will be conducted with an on-line Qualtrics-created survey.

Risks/Discomforts

There are no risks or are minimal for involvement in this study.

Benefits

There are no direct benefits for participants. However, it is hoped that through your participation, researchers will learn more about which factors would or would not influence academics to share or not to share their knowledge.

Confidentiality

All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than then primary investigator and assistant researches listed below will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator.

Compensation

There is no direct compensation.

Participation

Participation in this research study is completely voluntary. You have the right to withdraw at anytime or refuse to participate entirely.

Questions about the Research

If you have questions regarding this study, you may contact (Osama F Al Kurdi), at osama.ali@brunel.ac.uk

Questions about your Rights as Research Participants

If you have questions you do not feel comfortable asking me, you may contact my supervisor Dr Ramzi El Heddadeh at Ramzi.El-Haddadeh@brunel.ac.uk.

Research Ethical Approval Reference: 0165LRSep/2015-39

Thank you

Osama F Al Kurdi

I have read, understood the above and desire of my own free will to participate in this study

- ❍ Yes
- ❍ No

Part One: Demographic Information

Q1 What is your gender?

- ❍ Male
- ❍ Female

Q2 What is your age group?

- ❍ 21-30
- ❍ 31-40
- ❍ 41-50
- ❍ 51-60
- ❍ Above 60

Q3 Level of education

- ❍ Bachelor
- ❍ Master
- ❍ PhD / Doctorate
- ❍ Other _____

Q4 What College do you work in?

- ❍ _____

Q5 Number of years at the department

- ❍ 0-5
- ❍ 6-10
- ❍ 11-15
- ❍ 16-20
- ❍ 21-25
- ❍ Above 26

Q6 Number of years in Higher Education

- ❍ 0-5
- ❍ 6-10
- ❍ 11-15
- ❍ 16-20
- ❍ 21-25
- ❍ Above 26

Q7 Position

- ❍ Lecturer
- ❍ Senior lecturer
- ❍ Assistant Professor
- ❍ Associate Professor
- ❍ Professor
- ❍ Researcher
- ❍ Instructor
- ❍ Other _____

Q8 Organization Type

- ❍ Public: Primarily funded by state or government
- ❍ Private: Primarily NOT funded by state or government

Q9 This question was discarded because of technical errors

Q10 How many higher education institutions you worked for?

- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ More than 5

Part 2 Knowledge Sharing

For Q11-Q22, please indicate how strongly you agree or disagree with each statement by clicking a number. 1= Strongly Disagree 7 = Strongly Agree

Note: KNOWLEDGE includes know-what (important factual information – e.g., what drug is appropriate for an illness), know-how (skill and procedures – e.g., how to administer a drug), and know-why (understanding cause and effect relationships – e.g., understanding why a drug works).

Q11 Intention to share knowledge

Intention is the readiness of someone to engage in knowledge sharing activity

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
I have no intention of sharing knowledge with departmental members	❍	❍	❍	❍	❍	❍	❍
I intend to always provide my knowledge at the request of organizational members	❍	❍	❍	❍	❍	❍	❍
I intend to share my knowledge less frequently with other organizational members in the future	❍	❍	❍	❍	❍	❍	❍
I intend to share my knowledge with any colleague if it is helpful to the organization	❍	❍	❍	❍	❍	❍	❍

Q12 Attitudes towards sharing knowledge

Attitudes are set of beliefs (positive or negative) feelings toward the intention to perform the behaviour

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
Sharing knowledge with colleagues is harmful	❍	❍	❍	❍	❍	❍	❍
Sharing knowledge with colleagues is good	❍	❍	❍	❍	❍	❍	❍
Sharing knowledge with colleagues is pleasant	❍	❍	❍	❍	❍	❍	❍
Sharing knowledge with colleagues is worthless	❍	❍	❍	❍	❍	❍	❍

Q13 Subjective Norm towards Knowledge Sharing

Subjective norm formed from normative beliefs, which are the perceived social pressures from significant relevant other, or groups to perform or not to perform

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
In my opinion, my manager believes that I should share knowledge with my co-workers	❍	❍	❍	❍	❍	❍	❍
Generally speaking, I try to follow organization's policy toward knowledge sharing	❍	❍	❍	❍	❍	❍	❍
Generally speaking, I accept and carry out my manager's decision even though I disagree with the decision	❍	❍	❍	❍	❍	❍	❍

Q14 Perceived Behaviour Control

Subjective norm formed from normative beliefs, which are the perceived social pressures from significant relevant other, or groups to perform or not to perform

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
I have enough time to share knowledge with colleagues	❍	❍	❍	❍	❍	❍	❍
I have the necessary tools to share knowledge with colleagues	❍	❍	❍	❍	❍	❍	❍
I have the ability to share knowledge with colleagues	❍	❍	❍	❍	❍	❍	❍
Sharing knowledge with colleagues is within my control	❍	❍	❍	❍	❍	❍	❍

Q15 Perceived Reciprocal Benefits

Individuals engage in in social exchanges with expectation of that their contribution will result in reciprocal returns

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
When I share knowledge with colleagues, I expect them to respond to my request for knowledge	❍	❍	❍	❍	❍	❍	❍
When I share knowledge with colleagues, I believe that my queries for knowledge will be answered in the future	❍	❍	❍	❍	❍	❍	❍
My colleagues help me, so it is only fair to help them out when they are in need of knowledge	❍	❍	❍	❍	❍	❍	❍

Q16 **Perceived Loss of Knowledge Power**

Individuals consider their knowledge as a source of power and they fear losing that power by sharing it with others

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
Sharing knowledge with colleagues makes me lose my unique value in the organization	❍	❍	❍	❍	❍	❍	❍
Sharing knowledge with colleagues makes me lose my power base in the organization	❍	❍	❍	❍	❍	❍	❍
When I share knowledge with colleagues, I believe I will lose the uniqueness of my knowledge	❍	❍	❍	❍	❍	❍	❍
In my opinion, sharing knowledge with colleagues makes me lose the knowledge that makes me stand out with respect to others	❍	❍	❍	❍	❍	❍	❍

Q17 Perceived Self-Efficacy

knowledge self-efficacy refers to the "individual's judgment of his capabilities to contribute to the organizational performance"

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
Sharing my knowledge would help other members in the organization to solve problems	❍	❍	❍	❍	❍	❍	❍
Sharing my knowledge would create new opportunities for the organization	❍	❍	❍	❍	❍	❍	❍
Sharing my knowledge would improve work processes in the organization	❍	❍	❍	❍	❍	❍	❍
My knowledge sharing would help the organization achieve its goals	❍	❍	❍	❍	❍	❍	❍

Q18 Trust

"*extent to which a person is confident in and willing to act based on the words, actions, and decisions of another*"

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
I generally trust my colleagues, therefore I share my knowledge with them	❍	❍	❍	❍	❍	❍	❍
It is easy for me to trust my colleagues	❍	❍	❍	❍	❍	❍	❍
My colleagues and I trust each other	❍	❍	❍	❍	❍	❍	❍

Q19 Affiliation

Affiliation is the sense of togetherness of employees to help each other

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
In my opinion, members in my department keep close ties with each other	❍	❍	❍	❍	❍	❍	❍
I feel that members in my department consider other members' opinion highly	❍	❍	❍	❍	❍	❍	❍
In my opinion, members in my department are team players	❍	❍	❍	❍	❍	❍	❍
In my opinion, members of my department are loyal to their discipline	❍	❍	❍	❍	❍	❍	❍

Q20 Innovativeness

An individual's prescription that creativity and innovations are valued by the organisation

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
I feel that my department encourages suggesting ideas for new opportunities	❍	❍	❍	❍	❍	❍	❍
I feel that my department puts much value on taking risks even if that turns out to be a failure	❍	❍	❍	❍	❍	❍	❍
I feel that my department encourages finding new methods to perform a task	❍	❍	❍	❍	❍	❍	❍

Q21 Fairness

Fairness is employee's perception that organizational practices are just

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
In my opinion, members in my department can trust department head's judgment	❍	❍	❍	❍	❍	❍	❍
In my department, objectives are reasonable	❍	❍	❍	❍	❍	❍	❍
In my department, i feel that my manager does not show favoritism	❍	❍	❍	❍	❍	❍	❍

Q22 **Leadership**

Leadership in this context is defined as being able to influence others to convince them to willingly follow the goals of the leader

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
In my opinion, members of my department have a clear view of the direction of the institution	❍	❍	❍	❍	❍	❍	❍
I feel that the opinions of members of my department are not sought by the senior management team	❍	❍	❍	❍	❍	❍	❍
I feel that the senior management team are respected by members of my department	❍	❍	❍	❍	❍	❍	❍
I can trust my manager's judgment	❍	❍	❍	❍	❍	❍	❍

Part 3 Tools and Technology

Q23 Please indicate how strongly you agree or disagree with each statement by circling a number

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
In my organization, it is easy to use tools and technology to share knowledge	❍	❍	❍	❍	❍	❍	❍
In my organization, tools and technology for sharing knowledge are reliable	❍	❍	❍	❍	❍	❍	❍
In my opinion, tools and technology for sharing knowledge are available when needed	❍	❍	❍	❍	❍	❍	❍
In my opinion, tools and technology for sharing knowledge can be customized to fit individual needs	❍	❍	❍	❍	❍	❍	❍

Q24 Uses of Tools and Technology

Please indicate how frequently each of the following tools is used by you to share knowledge. 1 = Very Infrequently 4 = Moderate Frequency(Few times per month) 7 = Very Frequently (Many times daily)

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
I use e-mail to share knowledge with my co-workers	❍	❍	❍	❍	❍	❍	❍
I use discussion forums to share knowledge with my co-workers	❍	❍	❍	❍	❍	❍	❍
I use desktop computer conferencing (using networked PC simultaneously for discussion and information exchange with tools such as net meeting, instant messaging, etc) to share knowledge with my co-workers	❍	❍	❍	❍	❍	❍	❍
I share knowledge by inputting it into knowledge repository/company databases (containing existing expertise, lessons learned, best practices etc)	❍	❍	❍	❍	❍	❍	❍
I use intranet (including university portal) to share knowledge with colleagues	❍	❍	❍	❍	❍	❍	❍
I use computerized directory on experts with specific knowledge to locate the expertise that colleagues need	❍	❍	❍	❍	❍	❍	❍
I use videoconferencing to share knowledge with colleagues	❍	❍	❍	❍	❍	❍	❍
I use teleconferencing to share knowledge with colleagues	❍	❍	❍	❍	❍	❍	❍
I share knowledge through face-to-face discussions with colleagues	❍	❍	❍	❍	❍	❍	❍
I use electronic bulletin boards to share knowledge with my co-workers	❍	❍	❍	❍	❍	❍	❍
I use chat rooms to share knowledge with my co-workers	❍	❍	❍	❍	❍	❍	❍

Part 4 Knowledge Sharing Behaviour

Q25 *Please indicate how frequently you shared work related knowledge with your co-workers in the past year.*

1 = Very Infrequently 4 = Moderate Frequency(Few times per month)
7 = Very Frequently (Many times daily)

Note: KNOWLEDGE includes know-what (important factual information – e.g., what drug is appropriate for an illness), know-how (skill and procedures – e.g., how to administer a drug), and know-why (understanding cause and effect relationships – e.g., understanding why a drug works).

	1 Strongly Disagree	2 Disagree	3 Somehow Disagree	4 No Opinion	5 Somehow Agree	6 Agree	7 Strongly Agree
I share factual knowledge (know-what) from work with my co-workers	❍	❍	❍	❍	❍	❍	❍
I share internal reports and other official documents with my co-workers	❍	❍	❍	❍	❍	❍	❍
I share knowledge by inputting it into knowledge repository/organization databases (containing existing expertise, lessons learned, best practices etc)	❍	❍	❍	❍	❍	❍	❍
I share (know-how) or "tricks of the trade" from work with my co-workers	❍	❍	❍	❍	❍	❍	❍
I share expertise from education or training with my co-workers	❍	❍	❍	❍	❍	❍	❍
I share (know-why) knowledge from work with my co-workers	❍	❍	❍	❍	❍	❍	❍

Q26 Knowledge Type

Please indicate which type of knowledge do you share with colleagues

1= Never'', 2= Seldom'', 3= Sometimes'', 4= Often'' and 5= Always

	1 Never	2 Seldom	3 Sometimes	4 Often	5 Always
Academic (i.e teaching slides, assessment strategies, knowledge delivery, course design)	❍	❍	❍	❍	❍
Academic research	❍	❍	❍	❍	❍
Organizational (i.e processes, procedures, business plans)	❍	❍	❍	❍	❍
Social	❍	❍	❍	❍	❍

Additional Comments:

Please feel free to leave comments considering the questions presented and to highlight your point of view on Knowledge sharing among academics in university setting.

APPENDIX C – INSTRUMENT MEASUREMENT

Constructs	Item codes	Item Measurements	References
knowledge-sharing Intention	INT1	I have no intention of sharing knowledge with departmental members	Bock et al., (2005)
	INT2	I intend to always provide my knowledge at the request of organizational members	
	INT3	I intend to share my knowledge less frequently with other organizational members in the future	
	INT4	I intend to share my knowledge with any colleague if it is helpful to the organization	
Attitudes	ATT1	Sharing knowledge with colleagues is harmful	Based-upon Morris et al., (2005) Bock et al.,(2005)
	ATT2	Sharing knowledge with colleagues is good	
	ATT3	Sharing knowledge with colleagues is pleasant	
	ATT4	Sharing knowledge with colleagues is worthless	
Subjective norms	SN1	In my opinion, my manager believes that I should share knowledge with my co-workers	Bock et al., (2005)
	SN2	Generally speaking, I try to follow organization's policy toward knowledge sharing	
	SN3	Generally speaking, I accept and carry out my manager's decision even though I disagree with the decision	
Perceived behaviour control	PBC1	I have enough time to share knowledge with colleagues	Taylor and Todd (1995)
	PBC2	I have the necessary tools to share knowledge with colleagues	

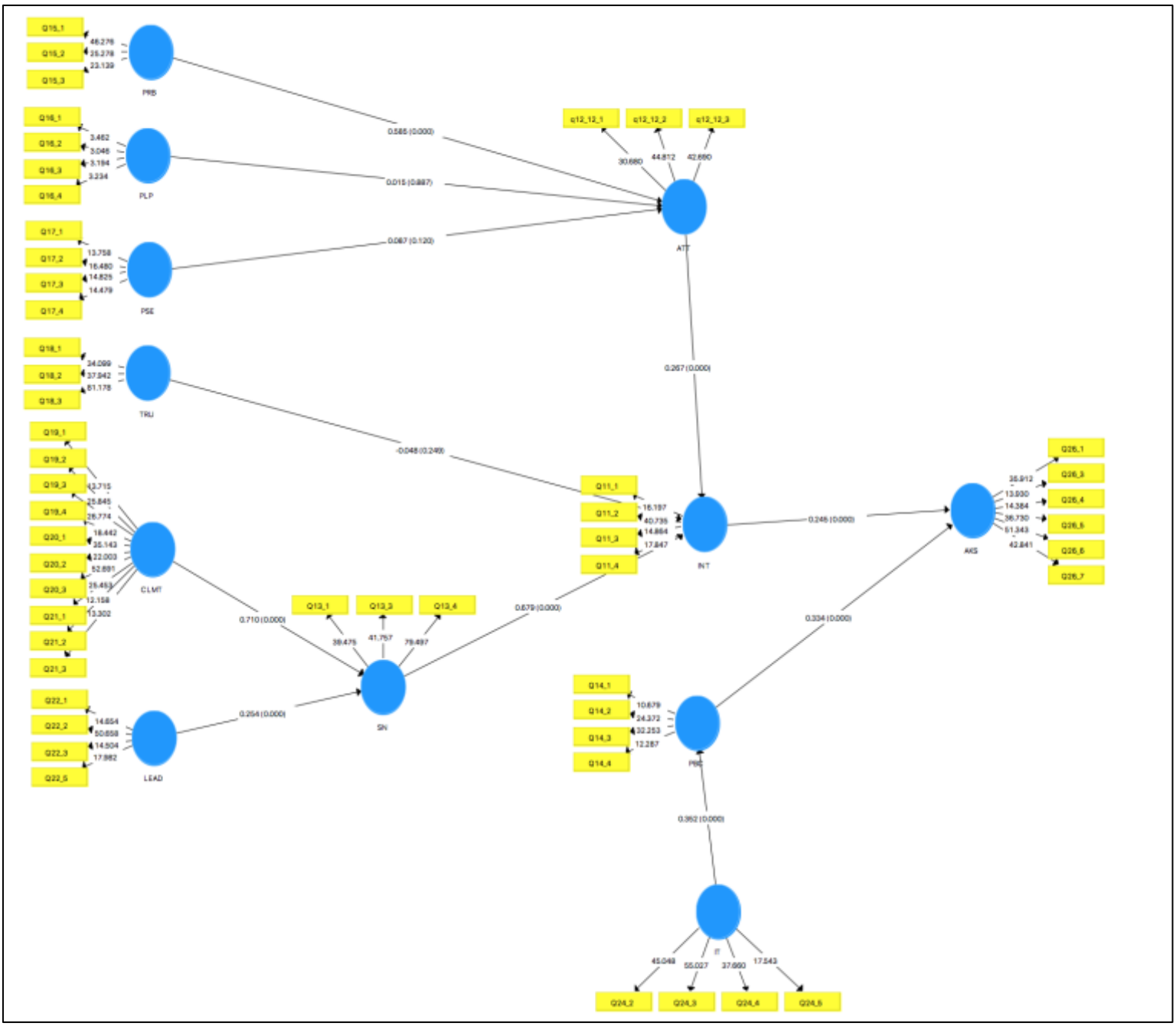
	PBC3	I have the ability to share knowledge with colleagues	
	PBC4	Sharing knowledge with colleagues is within my control	
Perceived reciprocal benefit	PRB1	When I share knowledge with colleagues, I expect them to respond to my request for knowledge	Kankanhalli et al., (2005) Wasko and Faraj (2005)
	PRB2	When I share knowledge with colleagues, I believe that my queries for knowledge will be answered in the future	
	PRB3	My colleagues help me, so it is only fair to help them out when they are in need of knowledge	
Perceived loss of knowledge power	PLP1	Sharing knowledge with colleagues makes me lose my unique value in the organization	Kankanhalli et al.,(2005)
	PLP2	Sharing knowledge with colleagues makes me lose my power base in the organization	
	PLP3	When I share knowledge with colleagues, I believe I will lose the uniqueness of my knowledge	
	PLP4	In my opinion, sharing knowledge with colleagues makes me lose the knowledge that makes me stand out with respect to others	
Perceived Knowledge self-efficacy	PSE1	Sharing my knowledge would help other members in the organization to solve problems	Bock and Kim (2002)
	PSE2	Sharing my knowledge would create new opportunities for the organization	
	PSE3	Sharing my knowledge would improve work processes in the organization	
	PSE4	My knowledge-sharing would help the organization achieve its goals	

Trust	TR1	I generally trust my colleagues, therefore I share my knowledge with them	Kim and Ju 2008
	TR2	It is easy for me to trust my colleagues	
	TR3	My colleagues and I trust each other	
Organization climate: Affiliation	OCA1	In my opinion, members in my department keep close ties with each other	Bock et al., (2005)
	OCA2	I feel that members in my department consider other member's opinion highly	
	OCA3	In my opinion, members in my department are team players	
	OCA4	In my opinion, members of my department are loyal to their discipline	
Organization climate: Innovativeness	OCI1	I feel that my department encourages suggesting ideas for new opportunities	Bock et al., (2005)
	OCI2	I feel that my department puts much value on taking risks even if that turns out to be a failure	
	OCI3	I feel that my department encourages finding new methods to perform a task	
Organization climate: Fairness	OCF1	In my opinion, members in my department can trust department head's judgment	Bock et al., (2005)
	OCF2	In my department, objectives are reasonable	
	OCF3	In my department, I feel that my manager does not show favouritism	
Leadership	LEAD1	In my opinion, members of my department have a clear view of the direction of the institution	Riege, 2005
	LEAD2	I feel that the opinions of members of my department are not sought by the senior management team	

	LEAD3	I feel that the senior management team are respected by members of my department	
	LEAD4	I can trust my manager's judgment	
KM tools and technology	IT1	In my organization, it is easy to use tools and technology to share knowledge	Teng and Song , 2005 derived from DeLone and McLean's (2003) study
	IT2	In my organization, tools and technology for sharing knowledge are reliable	
	IT3	In my opinion, tools and technology for sharing knowledge are available when needed	
	IT4	In my opinion, tools and technology for sharing knowledge can be customized to fit individual needs	
	IT5	I am satisfied with the overall quality of tools and technology for sharing knowledge in my organization	
	IT6	Tools and technology for sharing knowledge intimidate me	
	IT7	I hesitate to use tools and technology to share knowledge for fear of making mistakes	
Uses of tools and technology	UIT1	I use e-mail to share knowledge with my co-workers	Teng and Song , 2005 derived from DeLone and McLean's (2003) study
	UIT2	I use discussion forums to share knowledge with my co-workers	
	UIT3	I use desktop computer conferencing (using networked PC simultaneously for discussion and information exchange with tools such as net meeting, instant messaging, etc) to share knowledge with my co-workers	
	UIT4	I share knowledge by inputting it into knowledge repository/company databases (containing existing expertise, lessons learned, best practices etc)	

	UIT5	I use intranet (including university portal) to share knowledge with colleagues	
	UIT6	I use computerized directory on experts with specific knowledge to locate the expertise that colleagues need	
	UIT7	I use videoconferencing to share knowledge with colleagues	
	UIT8	I use teleconferencing to share knowledge with colleagues	
	UIT9	I share knowledge through face-to-face discussions with colleagues	
	UIT10	I use electronic bulletin boards to share knowledge with my co-workers	
	UIT11	I use chat rooms to share knowledge with my co-workers	
Actual knowledge-sharing	AKS1	I share factual knowledge (know-what) from work with my co-workers	Bock et al., (2005) Lee (2001)
	AKS2	I share internal reports and other official documents with my co-workers	
	AKS3	I share knowledge by inputting it into knowledge repository/organization databases (containing existing expertise, lessons learned, best practices etc)	
	AKS4	I share (know-how) or tricks of the trade from work with my co-workers	
	AKS5	I share expertise from education or training with my co-workers	
	AKS6	I share (know-why) knowledge from work with my co-workers	

APPENDIX D – Final Smart PLS Structual Model Results



APPENDIX E – Statistical Analysis of the Sample

SPSS Statistics and Frequency Tables

Intention to Share Knowledge

		Q11_1	Q11_2	Q11_3	Q11_4
N	Valid	257	257	257	257
	Missing	0	0	0	0
Mean		4.33	3.87	4.66	4.79
Std. Deviation		1.659	1.640	1.600	1.625
Percentiles	25	3.00	3.00	4.00	4.00
	50	5.00	4.00	5.00	5.00
	75	6.00	5.00	6.00	6.00

Q11_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	4.7	4.7	4.7
	2	35	13.6	13.6	18.3
	3	47	18.3	18.3	36.6
	4	10	3.9	3.9	40.5
	5	83	32.3	32.3	72.8
	6	55	21.4	21.4	94.2
	7	15	5.8	5.8	100.0
	Total	257	100.0	100.0	

Q11_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	7.0	7.0	7.0
	2	45	17.5	17.5	24.5
	3	48	18.7	18.7	43.2
	4	44	17.1	17.1	60.3
	5	60	23.3	23.3	83.7
	6	27	10.5	10.5	94.2
	7	15	5.8	5.8	100.0
	Total	257	100.0	100.0	

Q11_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	4.7	4.7	4.7
	2	24	9.3	9.3	14.0
	3	26	10.1	10.1	24.1
	4	24	9.3	9.3	33.5
	5	82	31.9	31.9	65.4
	6	69	26.8	26.8	92.2
	7	20	7.8	7.8	100.0
	Total	257	100.0	100.0	

Q11_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	3.9	3.9	3.9
	2	26	10.1	10.1	14.0
	3	20	7.8	7.8	21.8
	4	31	12.1	12.1	33.9
	5	57	22.2	22.2	56.0
	6	90	35.0	35.0	91.1
	7	23	8.9	8.9	100.0
	Total	257	100.0	100.0	

Attitude to Share Knowledge

		q12_12_1	q12_12_2	q12_12_3	q12_12_4
N	Valid	257	257	257	257
	Missing	0	0	0	0
Mean		4.25	4.07	4.31	4.79
Std. Deviation		1.717	1.699	1.848	1.625
Percentiles	25	3.00	3.00	3.00	4.00
	50	4.00	4.00	5.00	5.00
	75	6.00	5.00	6.00	6.00

q12_12_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	5.8	5.8	5.8
	2	32	12.5	12.5	18.3
	3	49	19.1	19.1	37.4
	4	33	12.8	12.8	50.2
	5	56	21.8	21.8	72.0
	6	49	19.1	19.1	91.1
	7	23	8.9	8.9	100.0
	Total	257	100.0	100.0	

q12_12_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	7.0	7.0	7.0
	2	41	16.0	16.0	23.0
	3	43	16.7	16.7	39.7
	4	32	12.5	12.5	52.1
	5	62	24.1	24.1	76.3
	6	48	18.7	18.7	94.9
	7	13	5.1	5.1	100.0
	Total	257	100.0	100.0	

q12_12_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	25	9.7	9.7	9.7
	2	34	13.2	13.2	23.0
	3	30	11.7	11.7	34.6
	4	25	9.7	9.7	44.4
	5	53	20.6	20.6	65.0
	6	71	27.6	27.6	92.6
	7	19	7.4	7.4	100.0
	Total	257	100.0	100.0	

q12_12_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	3.9	3.9	3.9
	2	26	10.1	10.1	14.0
	3	20	7.8	7.8	21.8
	4	31	12.1	12.1	33.9
	5	57	22.2	22.2	56.0
	6	90	35.0	35.0	91.1
	7	23	8.9	8.9	100.0
	Total	257	100.0	100.0	

Subjective Norm

		Q13_1	Q13_3	Q13_4
N	Valid	257	257	257
	Missing	0	0	0
Mean		4.96	3.87	4.60
Std. Deviation		1.658	1.640	1.672
Percentiles	25	4.00	3.00	3.00
	50	5.00	4.00	5.00
	75	6.00	5.00	6.00

Q13_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	3.1	3.1	3.1
	2	24	9.3	9.3	12.5
	3	26	10.1	10.1	22.6
	4	17	6.6	6.6	29.2
	5	57	22.2	22.2	51.4
	6	87	33.9	33.9	85.2
	7	38	14.8	14.8	100.0
	Total	257	100.0	100.0	

Q13_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	7.0	7.0	7.0
	2	45	17.5	17.5	24.5
	3	48	18.7	18.7	43.2
	4	44	17.1	17.1	60.3
	5	60	23.3	23.3	83.7
	6	27	10.5	10.5	94.2
	7	15	5.8	5.8	100.0
	Total	257	100.0	100.0	

Q13_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	4.7	4.7	4.7
	2	25	9.7	9.7	14.4
	3	38	14.8	14.8	29.2
	4	24	9.3	9.3	38.5
	5	62	24.1	24.1	62.6
	6	73	28.4	28.4	91.1
	7	23	8.9	8.9	100.0
	Total	257	100.0	100.0	

Percivied Behaviour Control

		Q14_1	Q14_2	Q14_3	Q14_4
N	Valid	257	257	257	257
	Missing	0	0	0	0
Mean		4.23	5.00	5.75	5.52
Std. Deviation		1.759	1.493	1.147	1.287
Percentiles	25	3.00	4.00	5.00	5.00
	50	5.00	5.00	6.00	6.00
	75	6.00	6.00	6.00	6.00

Q14_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	3.9	3.9	3.9
	2	46	17.9	17.9	21.8
	3	54	21.0	21.0	42.8
	4	10	3.9	3.9	46.7
	5	60	23.3	23.3	70.0
	6	55	21.4	21.4	91.4
	7	22	8.6	8.6	100.0
	Total	257	100.0	100.0	

Q14_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	1.2	1.2	1.2
	2	20	7.8	7.8	8.9
	3	31	12.1	12.1	21.0
	4	14	5.4	5.4	26.5
	5	71	27.6	27.6	54.1
	6	89	34.6	34.6	88.7
	7	29	11.3	11.3	100.0
	Total	257	100.0	100.0	

Q14_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	.8	.8	.8
	2	6	2.3	2.3	3.1
	3	8	3.1	3.1	6.2
	4	4	1.6	1.6	7.8
	5	59	23.0	23.0	30.7
	6	118	45.9	45.9	76.7
	7	60	23.3	23.3	100.0
	Total	257	100.0	100.0	

Q14_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	.8	.8	.8
	2	8	3.1	3.1	3.9
	3	16	6.2	6.2	10.1
	4	11	4.3	4.3	14.4
	5	64	24.9	24.9	39.3
	6	103	40.1	40.1	79.4
	7	53	20.6	20.6	100.0
	Total	257	100.0	100.0	

Percived Reciprocal Benfits

		Q15_1	Q15_2	Q15_3
N	Valid	257	257	257
	Missing	0	0	0
Mean		4.74	4.97	4.60
Std. Deviation		1.767	1.533	1.843
Percentiles	25	3.00	4.00	3.00
	50	5.00	5.00	5.00
	75	6.00	6.00	6.00

Q15_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	14	5.4	5.4	5.4
	2	28	10.9	10.9	16.3
	3	24	9.3	9.3	25.7
	4	27	10.5	10.5	36.2
	5	49	19.1	19.1	55.3
	6	81	31.5	31.5	86.8
	7	34	13.2	13.2	100.0
	Total	257	100.0	100.0	

Q15_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	3.5	3.5	3.5
	2	17	6.6	6.6	10.1
	3	23	8.9	8.9	19.1
	4	19	7.4	7.4	26.5
	5	70	27.2	27.2	53.7
	6	94	36.6	36.6	90.3
	7	25	9.7	9.7	100.0
	Total	257	100.0	100.0	

Q15_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	7.0	7.0	7.0
	2	26	10.1	10.1	17.1
	3	30	11.7	11.7	28.8
	4	34	13.2	13.2	42.0
	5	53	20.6	20.6	62.6
	6	50	19.5	19.5	82.1
	7	46	17.9	17.9	100.0
	Total	257	100.0	100.0	

Percived loss of knowledge power

		Q16_1	Q16_2	Q16_3	Q16_4
N	Valid	257	257	257	257
	Missing	0	0	0	0
Mean		2.33	2.36	2.30	2.19
Std. Deviation		1.584	1.565	1.494	1.450
Percentiles	25	1.00	1.00	1.00	1.00
	50	2.00	2.00	2.00	2.00
	75	3.00	3.00	3.00	3.00

Q16_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	101	39.3	39.3	39.3
	2	81	31.5	31.5	70.8
	3	25	9.7	9.7	80.5
	4	10	3.9	3.9	84.4
	5	22	8.6	8.6	93.0
	6	16	6.2	6.2	99.2
	7	2	.8	.8	100.0
	Total	257	100.0	100.0	

Q16_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	96	37.4	37.4	37.4
	2	86	33.5	33.5	70.8
	3	20	7.8	7.8	78.6
	4	14	5.4	5.4	84.0
	5	24	9.3	9.3	93.4
	6	17	6.6	6.6	100.0
	Total	257	100.0	100.0	

Q16_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	95	37.0	37.0	37.0
	2	87	33.9	33.9	70.8
	3	31	12.1	12.1	82.9
	4	7	2.7	2.7	85.6
	5	23	8.9	8.9	94.6
	6	13	5.1	5.1	99.6
	7	1	.4	.4	100.0
	Total	257	100.0	100.0	

Q16_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	102	39.7	39.7	39.7
	2	85	33.1	33.1	72.8
	3	35	13.6	13.6	86.4
	4	5	1.9	1.9	88.3
	5	14	5.4	5.4	93.8
	6	15	5.8	5.8	99.6
	7	1	.4	.4	100.0
	Total	257	100.0	100.0	

Percived Self Efficacy

		Q17_1	Q17_2	Q17_3	Q17_4
N	Valid	257	257	257	257
	Missing	0	0	0	0
Mean		6.08	5.93	5.93	5.93
Std. Deviation		.769	1.036	1.025	.974
Percentiles	25	6.00	6.00	6.00	6.00
	50	6.00	6.00	6.00	6.00
	75	7.00	7.00	7.00	7.00

Q17_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	.4	.4	.4
	4	7	2.7	2.7	3.1
	5	39	15.2	15.2	18.3
	6	133	51.8	51.8	70.0
	7	77	30.0	30.0	100.0
	Total	257	100.0	100.0	

Q17_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	.4	.4	.4
	3	9	3.5	3.5	3.9
	4	16	6.2	6.2	10.1
	5	35	13.6	13.6	23.7
	6	116	45.1	45.1	68.9
	7	80	31.1	31.1	100.0
	Total	257	100.0	100.0	

Q17_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	4	1.6	1.6	1.6
	3	7	2.7	2.7	4.3
	4	7	2.7	2.7	7.0
	5	41	16.0	16.0	23.0
	6	124	48.2	48.2	71.2
	7	74	28.8	28.8	100.0
	Total	257	100.0	100.0	

Q17_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	4	1.6	1.6	1.6
	3	3	1.2	1.2	2.7
	4	10	3.9	3.9	6.6
	5	43	16.7	16.7	23.3
	6	127	49.4	49.4	72.8
	7	70	27.2	27.2	100.0
	Total	257	100.0	100.0	

Perceived Interpersonal Trust

		Q18_1	Q18_2	Q18_3
N	Valid	257	257	257
	Missing	0	0	0
Mean		5.42	5.12	5.06
Std. Deviation		1.401	1.524	1.501
Percentiles	25	5.00	5.00	4.00
	50	6.00	5.00	5.00
	75	6.00	6.00	6.00

Q18_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	1.9	1.9	1.9
	2	9	3.5	3.5	5.4
	3	18	7.0	7.0	12.5
	4	14	5.4	5.4	17.9
	5	53	20.6	20.6	38.5
	6	110	42.8	42.8	81.3
	7	48	18.7	18.7	100.0
	Total	257	100.0	100.0	

Q18_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	1.6	1.6	1.6
	2	17	6.6	6.6	8.2
	3	27	10.5	10.5	18.7
	4	14	5.4	5.4	24.1
	5	77	30.0	30.0	54.1
	6	71	27.6	27.6	81.7
	7	47	18.3	18.3	100.0
	Total	257	100.0	100.0	

Q18_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	2.7	2.7	2.7
	2	10	3.9	3.9	6.6
	3	31	12.1	12.1	18.7
	4	22	8.6	8.6	27.2
	5	65	25.3	25.3	52.5
	6	86	33.5	33.5	86.0
	7	36	14.0	14.0	100.0
	Total	257	100.0	100.0	

Organizational Climate: Affiliation

		Q19_1	Q19_2	Q19_3	Q19_4
N	Valid	257	257	257	257
	Missing	0	0	0	0
Mean		4.86	4.86	4.76	5.31
Std. Deviation		1.627	1.525	1.638	1.356
Percentiles	25	3.00	4.00	3.00	5.00
	50	5.00	5.00	5.00	6.00
	75	6.00	6.00	6.00	6.00

Q19_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	1.9	1.9	1.9
	2	26	10.1	10.1	12.1
	3	34	13.2	13.2	25.3
	4	17	6.6	6.6	31.9
	5	64	24.9	24.9	56.8
	6	76	29.6	29.6	86.4
	7	35	13.6	13.6	100.0
	Total	257	100.0	100.0	

Q19_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	3.1	3.1	3.1
	2	18	7.0	7.0	10.1
	3	26	10.1	10.1	20.2
	4	23	8.9	8.9	29.2
	5	88	34.2	34.2	63.4
	6	64	24.9	24.9	88.3
	7	30	11.7	11.7	100.0
	Total	257	100.0	100.0	

Q19_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	4.7	4.7	4.7
	2	20	7.8	7.8	12.5
	3	33	12.8	12.8	25.3
	4	17	6.6	6.6	31.9
	5	72	28.0	28.0	59.9
	6	77	30.0	30.0	89.9
	7	26	10.1	10.1	100.0
	Total	257	100.0	100.0	

Q19_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	1.6	1.6	1.6
	2	13	5.1	5.1	6.6
	3	7	2.7	2.7	9.3
	4	30	11.7	11.7	21.0
	5	64	24.9	24.9	45.9
	6	100	38.9	38.9	84.8
	7	39	15.2	15.2	100.0
	Total	257	100.0	100.0	

Organizational Climate: Innovativeness

		Q20_1	Q20_2	Q20_3
N	Valid	257	257	257
	Missing	0	0	0
Mean		4.96	3.87	4.60
Std. Deviation		1.658	1.640	1.672
Percentiles	25	4.00	3.00	3.00
	50	5.00	4.00	5.00
	75	6.00	5.00	6.00

Q20_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	3.1	3.1	3.1
	2	24	9.3	9.3	12.5
	3	26	10.1	10.1	22.6
	4	17	6.6	6.6	29.2
	5	57	22.2	22.2	51.4
	6	87	33.9	33.9	85.2
	7	38	14.8	14.8	100.0
	Total	257	100.0	100.0	

Q20_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	7.0	7.0	7.0
	2	45	17.5	17.5	24.5
	3	48	18.7	18.7	43.2
	4	44	17.1	17.1	60.3
	5	60	23.3	23.3	83.7
	6	27	10.5	10.5	94.2
	7	15	5.8	5.8	100.0
	Total	257	100.0	100.0	

Q20_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	4.7	4.7	4.7
	2	25	9.7	9.7	14.4
	3	38	14.8	14.8	29.2
	4	24	9.3	9.3	38.5
	5	62	24.1	24.1	62.6
	6	73	28.4	28.4	91.1
	7	23	8.9	8.9	100.0
	Total	257	100.0	100.0	

Organizational Climate: Fairness

		Q21_1	Q21_2	Q21_3
N	Valid	257	257	257
	Missing	0	0	0
Mean		4.74	4.97	4.60
Std. Deviation		1.767	1.533	1.843
Percentiles	25	3.00	4.00	3.00
	50	5.00	5.00	5.00
	75	6.00	6.00	6.00

Q21_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	14	5.4	5.4	5.4
	2	28	10.9	10.9	16.3
	3	24	9.3	9.3	25.7
	4	27	10.5	10.5	36.2
	5	49	19.1	19.1	55.3
	6	81	31.5	31.5	86.8
	7	34	13.2	13.2	100.0
	Total	257	100.0	100.0	

Q21_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	3.5	3.5	3.5
	2	17	6.6	6.6	10.1
	3	23	8.9	8.9	19.1
	4	19	7.4	7.4	26.5
	5	70	27.2	27.2	53.7
	6	94	36.6	36.6	90.3
	7	25	9.7	9.7	100.0
	Total	257	100.0	100.0	

Q21_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	7.0	7.0	7.0
	2	26	10.1	10.1	17.1
	3	30	11.7	11.7	28.8
	4	34	13.2	13.2	42.0
	5	53	20.6	20.6	62.6
	6	50	19.5	19.5	82.1
	7	46	17.9	17.9	100.0
	Total	257	100.0	100.0	

leadership

		Q22_1	Q22_2	Q22_3	Q22_5
N	Valid	257	257	257	257
	Missing	0	0	0	0
Mean		4.33	3.87	4.66	4.79
Std. Deviation		1.659	1.640	1.600	1.625
Percentiles	25	3.00	3.00	4.00	4.00
	50	5.00	4.00	5.00	5.00
	75	6.00	5.00	6.00	6.00

Q22_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	4.7	4.7	4.7
	2	35	13.6	13.6	18.3
	3	47	18.3	18.3	36.6
	4	10	3.9	3.9	40.5
	5	83	32.3	32.3	72.8
	6	55	21.4	21.4	94.2
	7	15	5.8	5.8	100.0
	Total	257	100.0	100.0	

Q22_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	7.0	7.0	7.0
	2	45	17.5	17.5	24.5
	3	48	18.7	18.7	43.2
	4	44	17.1	17.1	60.3
	5	60	23.3	23.3	83.7
	6	27	10.5	10.5	94.2
	7	15	5.8	5.8	100.0
	Total	257	100.0	100.0	

Q22_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	4.7	4.7	4.7
	2	24	9.3	9.3	14.0
	3	26	10.1	10.1	24.1
	4	24	9.3	9.3	33.5
	5	82	31.9	31.9	65.4
	6	69	26.8	26.8	92.2
	7	20	7.8	7.8	100.0
	Total	257	100.0	100.0	

Q22_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	3.9	3.9	3.9
	2	26	10.1	10.1	14.0
	3	20	7.8	7.8	21.8
	4	31	12.1	12.1	33.9
	5	57	22.2	22.2	56.0
	6	90	35.0	35.0	91.1
	7	23	8.9	8.9	100.0
	Total	257	100.0	100.0	

KM Tools and Technology

		Q24_2	Q24_3	Q24_4	Q24_5
N	Valid	257	257	257	257
	Missing	0	0	0	0
Mean		4.95	4.76	4.90	4.42
Std. Deviation		1.672	1.590	1.570	1.715
Percentiles	25	4.00	3.50	4.00	3.00
	50	5.00	5.00	5.00	5.00
	75	6.00	6.00	6.00	6.00

Q24_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	3.9	3.9	3.9
	2	28	10.9	10.9	14.8
	3	17	6.6	6.6	21.4
	4	12	4.7	4.7	26.1
	5	65	25.3	25.3	51.4
	6	92	35.8	35.8	87.2
	7	33	12.8	12.8	100.0
	Total	257	100.0	100.0	

Q24_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	3.5	3.5	3.5
	2	19	7.4	7.4	10.9
	3	36	14.0	14.0	24.9
	4	27	10.5	10.5	35.4
	5	59	23.0	23.0	58.4
	6	84	32.7	32.7	91.1
	7	23	8.9	8.9	100.0
	Total	257	100.0	100.0	

Q24_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	3.1	3.1	3.1
	2	23	8.9	8.9	12.1
	3	22	8.6	8.6	20.6
	4	23	8.9	8.9	29.6
	5	62	24.1	24.1	53.7
	6	96	37.4	37.4	91.1
	7	23	8.9	8.9	100.0
	Total	257	100.0	100.0	

Q24_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	19	7.4	7.4	7.4
	2	26	10.1	10.1	17.5
	3	34	13.2	13.2	30.7
	4	33	12.8	12.8	43.6
	5	52	20.2	20.2	63.8
	6	80	31.1	31.1	94.9
	7	13	5.1	5.1	100.0
	Total	257	100.0	100.0	

Use of Technology for sharing

		Q25_1	Q25_2	Q25_3	Q25_4	Q25_5	Q25_6	Q25_7	Q25_8	Q25_9
N	Valid	257	257	257	257	257	257	257	257	257
	Missing	0	0	0	0	0	0	0	0	0
Mean		5.36	3.29	3.25	3.44	3.91	3.20	2.84	2.86	5.66
Std. Deviation		1.747	1.884	1.918	1.968	1.888	1.905	1.846	1.872	1.521
Percentiles	25	4.00	1.50	2.00	2.00	2.00	1.00	1.00	1.00	5.00
	50	6.00	3.00	3.00	3.00	4.00	3.00	2.00	2.00	6.00
	75	7.00	5.00	5.00	5.00	6.00	5.00	4.00	5.00	7.00

		Q25_10	Q25_11
N	Valid	257	257
	Missing	0	0
Mean		2.79	2.41
Std. Deviation		1.827	1.663
Percentiles	25	1.00	1.00
	50	2.00	2.00
	75	4.00	3.00

Q25_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	14	5.4	5.4	5.4
	2	15	5.8	5.8	11.3
	3	7	2.7	2.7	14.0
	4	32	12.5	12.5	26.5
	5	28	10.9	10.9	37.4
	6	83	32.3	32.3	69.6
	7	78	30.4	30.4	100.0
	Total	257	100.0	100.0	

Q25_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	64	24.9	24.9	24.9
	2	47	18.3	18.3	43.2
	3	28	10.9	10.9	54.1
	4	37	14.4	14.4	68.5
	5	36	14.0	14.0	82.5
	6	39	15.2	15.2	97.7
	7	6	2.3	2.3	100.0
	Total	257	100.0	100.0	

Q25_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	63	24.5	24.5	24.5
	2	57	22.2	22.2	46.7
	3	25	9.7	9.7	56.4
	4	32	12.5	12.5	68.9
	5	36	14.0	14.0	82.9
	6	33	12.8	12.8	95.7
	7	11	4.3	4.3	100.0
	Total	257	100.0	100.0	

Q25_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	60	23.3	23.3	23.3
	2	46	17.9	17.9	41.2
	3	27	10.5	10.5	51.8
	4	35	13.6	13.6	65.4
	5	37	14.4	14.4	79.8
	6	37	14.4	14.4	94.2
	7	15	5.8	5.8	100.0
	Total	257	100.0	100.0	

Q25_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	37	14.4	14.4	14.4
	2	43	16.7	16.7	31.1
	3	22	8.6	8.6	39.7
	4	38	14.8	14.8	54.5
	5	52	20.2	20.2	74.7
	6	50	19.5	19.5	94.2
	7	15	5.8	5.8	100.0
	Total	257	100.0	100.0	

Q25_6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	65	25.3	25.3	25.3
	2	55	21.4	21.4	46.7
	3	28	10.9	10.9	57.6
	4	37	14.4	14.4	72.0
	5	29	11.3	11.3	83.3
	6	31	12.1	12.1	95.3
	7	12	4.7	4.7	100.0
	Total	257	100.0	100.0	

Q25_7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	81	31.5	31.5	31.5
	2	68	26.5	26.5	58.0
	3	19	7.4	7.4	65.4
	4	27	10.5	10.5	75.9
	5	35	13.6	13.6	89.5
	6	16	6.2	6.2	95.7
	7	11	4.3	4.3	100.0
	Total	257	100.0	100.0	

Q25_8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	83	32.3	32.3	32.3
	2	66	25.7	25.7	58.0
	3	18	7.0	7.0	65.0
	4	22	8.6	8.6	73.5
	5	40	15.6	15.6	89.1
	6	18	7.0	7.0	96.1
	7	10	3.9	3.9	100.0
	Total	257	100.0	100.0	

Q25_9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	2.3	2.3	2.3
	2	15	5.8	5.8	8.2
	3	1	.4	.4	8.6
	4	23	8.9	8.9	17.5
	5	40	15.6	15.6	33.1
	6	81	31.5	31.5	64.6
	7	91	35.4	35.4	100.0
	Total	257	100.0	100.0	

Q25_10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	84	32.7	32.7	32.7
	2	66	25.7	25.7	58.4
	3	21	8.2	8.2	66.5
	4	33	12.8	12.8	79.4
	5	19	7.4	7.4	86.8
	6	27	10.5	10.5	97.3
	7	7	2.7	2.7	100.0
	Total	257	100.0	100.0	

Q25_11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	106	41.2	41.2	41.2
	2	67	26.1	26.1	67.3
	3	21	8.2	8.2	75.5
	4	19	7.4	7.4	82.9
	5	30	11.7	11.7	94.6
	6	8	3.1	3.1	97.7
	7	6	2.3	2.3	100.0
	Total	257	100.0	100.0	

Actual Kowledge Sharin g

		Q26_1	Q26_3	Q26_4	Q26_5	Q26_6	Q26_7
N	Valid	257	257	257	257	257	257
	Missing	0	0	0	0	0	0
Mean		4.92	4.59	3.75	4.64	4.81	5.00
Std. Deviation		1.665	1.814	2.007	1.729	1.670	1.525
Percentiles	25	4.00	3.00	2.00	3.00	4.00	4.00
	50	5.00	5.00	4.00	5.00	5.00	5.00
	75	6.00	6.00	6.00	6.00	6.00	6.00

Q26_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	5.1	5.1	5.1
	2	16	6.2	6.2	11.3
	3	19	7.4	7.4	18.7
	4	42	16.3	16.3	35.0
	5	49	19.1	19.1	54.1
	6	77	30.0	30.0	84.0
	7	41	16.0	16.0	100.0
	Total	257	100.0	100.0	

Q26_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	22	8.6	8.6	8.6
	2	24	9.3	9.3	17.9
	3	22	8.6	8.6	26.5
	4	37	14.4	14.4	40.9
	5	46	17.9	17.9	58.8
	6	77	30.0	30.0	88.7
	7	29	11.3	11.3	100.0
	Total	257	100.0	100.0	

Q26_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	46	17.9	17.9	17.9
	2	51	19.8	19.8	37.7
	3	19	7.4	7.4	45.1
	4	32	12.5	12.5	57.6
	5	42	16.3	16.3	73.9
	6	47	18.3	18.3	92.2
	7	20	7.8	7.8	100.0
	Total	257	100.0	100.0	

Q26_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	4.3	4.3	4.3
	2	31	12.1	12.1	16.3
	3	24	9.3	9.3	25.7
	4	42	16.3	16.3	42.0
	5	49	19.1	19.1	61.1
	6	65	25.3	25.3	86.4
	7	35	13.6	13.6	100.0
	Total	257	100.0	100.0	

Q26_6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	4.3	4.3	4.3
	2	23	8.9	8.9	13.2
	3	21	8.2	8.2	21.4
	4	41	16.0	16.0	37.4
	5	50	19.5	19.5	56.8
	6	76	29.6	29.6	86.4
	7	35	13.6	13.6	100.0
	Total	257	100.0	100.0	

Q26_7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	2.3	2.3	2.3
	2	17	6.6	6.6	8.9
	3	23	8.9	8.9	17.9
	4	35	13.6	13.6	31.5
	5	53	20.6	20.6	52.1
	6	91	35.4	35.4	87.5
	7	32	12.5	12.5	100.0
	Total	257	100.0	100.0	

Type of Knowledge shared

		Q27_1	Q27_2	Q27_3	Q27_4
N	Valid	257	257	257	257
	Missing	0	0	0	0
Mean		3.95	3.52	3.55	3.33
Std. Deviation		.981	1.129	1.185	1.233
Percentiles	25	3.00	3.00	3.00	3.00
	50	4.00	4.00	4.00	3.00
	75	5.00	4.00	5.00	4.00

Q27_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	1.9	1.9	1.9
	2	15	5.8	5.8	7.8
	3	55	21.4	21.4	29.2
	4	95	37.0	37.0	66.1
	5	87	33.9	33.9	100.0
	Total	257	100.0	100.0	

Q27_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	14	5.4	5.4	5.4
	2	35	13.6	13.6	19.1
	3	66	25.7	25.7	44.7
	4	88	34.2	34.2	79.0
	5	54	21.0	21.0	100.0
	Total	257	100.0	100.0	

Q27_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	5.8	5.8	5.8
	2	37	14.4	14.4	20.2
	3	62	24.1	24.1	44.4
	4	77	30.0	30.0	74.3
	5	66	25.7	25.7	100.0
	Total	257	100.0	100.0	

Q27_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	26	10.1	10.1	10.1
	2	36	14.0	14.0	24.1
	3	73	28.4	28.4	52.5
	4	70	27.2	27.2	79.8
	5	52	20.2	20.2	100.0
	Total	257	100.0	100.0	