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Impact of Knowledge Management Processes Upon Job Satisfaction and Job Performance

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Impact of Knowledge Management Processes Upon Job Satisfaction and Job Performance

by

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We hereby certify that this dissertation, submitted by George R. Cooper conforms to acceptable standards and is fully adequate in scope and quality to fulfill the dissertation requirements for the degree of Doctor of Philosophy.

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An Abstract of a Dissertation Submitted to Nova Southeastern University in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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While we might know anecdotally that the implementation of knowledge management in an organization improves job satisfaction and job performance, there are limited empirical studies that assess this assumption. There have been studies done in this area but the results vary in terms of which knowledge management processes have an impact upon job satisfaction and which do not. Similarly, many studies make assumptions that job satisfaction leads to improved job performance without testing for that variable.

The goal of this dissertation is to assess whether the knowledge management processes have a positive impact upon job satisfaction and job performance and if job satisfaction itself impacts job performance. A secondary goal is to examine if the results vary based upon demographic factors such as job classification, location or functional group.

This research is a survey-based, cross sectional quantitative study which examined knowledge management workers in one organization with multiple locations with a focus on North America but included other areas as well.

Of the five knowledge management processes studied (acquisition, sharing, creation, codification and retention) only knowledge sharing and knowledge retention demonstrated a positive impact upon worker job satisfaction. This finding supports, in part, previous findings in other studies of the impact of knowledge management processes.

Knowledge management worker job satisfaction overall showed a positive impact on worker job performance. Prior studies have made the assumption that there is a connection between job satisfaction and job performance without actually measuring this connection. This study, however, did measure this connection and verifies that a connection exists. Separately this study found that none of the five knowledge management processes individually showed a positive direct impact upon worker job performance when measured collectively or by job level.

In a new finding, this study demonstrates that the impact of knowledge management processes on job satisfaction varies based upon job level, location, and functions.

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Chapter 1

Introduction

Background

In the past, only a few studies have linked knowledge management and job satisfaction (Koseoglu et al., 2010; Lee & Chang, 2007; Singh & Sharma, 2011). However, in the last five years, researchers have built upon the earlier works and focused specifically on knowledge management processes and job satisfaction (Alias et al.; 2018; Henttonen et al., 2018; Kianto et al., 2016; Masa'deh, 2016; Masa'deh et al.; 2019; Pruzinsky & Mihalcova, 2017). Many of these studies have examined five knowledge processes; knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification, and knowledge retention but found differences in outcomes.

Knowledge management and the key processes have existed for a number of years, with substantial investments made by firms to create the necessary environments. Management typically seeks to enhance performance and achieve an improved return on investment. The growth of a firm is impacted by its ability to generate valuable knowledge and to build upon that knowledge. The advanced economies of today are driven by innovation and the ability to manage ever-increasing forms of knowledge. Knowledge management has become an essential management and organizational capability to create value **(**Bogner & Bansal, 2007; Gloet & Samson, 2020; Muthuveloo et al., 2017).

Knowledge management is about motivating and enabling knowledgeable individuals to use and share their knowledge with others by various means, often via modern information technology systems (Lee & Choi, 2003; Pruzinsky & Mihalcova, 2017).

Knowledge is seen by many firms to be a strategic and valuable resource and those firms strive to collect information, to provide insights into processes, customers, and markets, or to satisfy other business needs (Alias et al., 2018). Traditionally, knowledge management has focused upon information and systems but over time there has been more recognition of the roles of individuals in the ultimate success or failure of knowledge management (Henttonen et al., 2016). It has been observed that when individuals are happy in their jobs, they will work systematically and be more creative and innovative (Alias et al., 2018). Knowledge management helps employees to derive value from knowledge and establish shared understanding (Mohrman et al., 2002).

In organizational behavior, job satisfaction has been one of most researched topics since the 1930's. Much of the focus has been upon skill variety, job design, job variety, how the worker feels about their function and other variables (Alias et al., 2018; Alshmemri et al., 2017; Pruzinsky & Mihalcova, 2017). Job satisfaction is defined as the gratification and fulfillment that one receives from doing their job (Masa'deh, 2016). Job dissatisfaction is often defined as a negative judgement about one's job situation or dislikes (Henttonen et al., 2016). Job satisfaction is an accumulation of factors related to the job the individual performs, and if the employee feels success is possible. If people feel appreciated in their jobs, they develop positive attitudes and experience greater satisfaction. Any factor that allows for improved job performance therefore leads to higher job satisfaction (Pruzinsky & Mihalcova, 2017).

Some researchers have found connections between specific knowledge management processes and job satisfaction with some variability in findings on which of the processes have a strong connection with various employees within a single organization.

Knowledge sharing was seen in a number of the studies to be the key knowledge management process which promoted job satisfaction for most employee levels (Kianto et al., 2016; Pruzinsky & Mihalcov, 2017). Knowledge sharing and job satisfaction based on these findings have become an additional focus of job satisfaction studies (Alias et al. 2018; Henttonen et al. 2016). Knowledge sharing is seen as having two major components; an individual's propensity towards sharing knowledge and the actual execution of knowledge sharing behavior. Henttonen et al. (2016) studied a single municipal organization and found that knowledge sharing propensity leads to knowledge sharing behavior which leads to improved job satisfaction and performance. Other studies identify the impact of various facets of knowledge management processes on job satisfaction but also factor in other differences in knowledge management infrastructure such as technologies deployed, structural components, and organizational culture (Masa'deh, 2016; Masa'deh et al., 2019).

Kianto et al. (2016) studied a Finnish municipal organization, and found that knowledge sharing, knowledge codification and knowledge retention were connected to job satisfaction while knowledge acquisition and knowledge creation were not factors that impacted job satisfaction. They noted that there were differences in the percentages of job satisfaction derived from the various processes depending upon the employee group. In a similar study, based upon a municipal organization in Slovakia, Pruzinsky and Mihalcov (2017) found that knowledge management processes of knowledge sharing, knowledge codification and knowledge retention were connected to job satisfaction and that knowledge sharing was the key knowledge management process that, for most employee levels, promoted job satisfaction but knowledge creation and acquisition had

limited influence on job satisfaction. They also found that there were some differences of job satisfaction amounts based on employee levels/positions. Alias et al., (2018) found that knowledge acquisition and creation were factors that should be considered but deemed it difficult to measure the value of a single acquisition of knowledge or the creation of a single knowledge component. Shujahat et al., (2018) determined that knowledge creation and knowledge sharing impacted job satisfaction and innovation. Pruzinsky & Mihalcov (2017) noted that the lack of impact on job satisfaction by knowledge creation and acquisition process could be due to the nature of the work done by the municipal organization or because the organization did not support nor reward for these activities.

Judge et al. (2001) implied that job satisfaction led to higher performance but they did not actually build job satisfaction into their theoretical model and hence did not test for it. There have been relatively few studies that examine the connections between knowledge management, job satisfaction and job performance. Many of the research studies simply do not directly address the potential connection between job satisfaction and job performance or they assume that a connection exists (Alias et al., 2018; Henttonen et al., 2018; Kianto et al., 2016; Masa'deh, 2016; Masa'deh et al., 2019; Pruzinsky & Mihalcova, 2017). These studies and a literature review indicate that there are specific issues which were not completely reviewed or otherwise addressed. This has created a gap in the literature which is the focus of this proposed study.

In several studies the researchers indicated that their study assumed that there was a connection between satisfaction and performance but the assumption was not tested (Kianto et al., 2016; Pruzinsky & Mihalcov, 2017). This assumption is based upon older

studies, not involving knowledge management, on the consequences of job satisfaction in which prior researchers found a link between job satisfaction and job performance (Judge et al., 2001; Springer, 2001). Judge et al. (2001), in their review of prior research studies determined that in some cases the researchers found a relationship between job satisfaction and job performance but the results overall were not conclusive. Henttonen et al. (2016) found knowledge sharing propensity impacted individual behaviors and the researchers found a linkage to performance but did not address other factors such as propensity to trust others or organization rewards for performance, hence this is an assumed casual impact. Kianto et al, (2019) found that knowledge creation and knowledge utilization did positively and significantly impact job productivity but did not address job satisfaction directly.

There is no clear empirical evident that shows knowledge management processes (sharing, retention, acquisition, codification, creation) impact job satisfaction and job performance. There also is no clear evidence that there is an impact based upon job category or the functional group that the knowledge worker resides.

Problem Statement

While we might know anecdotally that the implementation of knowledge management in an organization improves job satisfaction and job performance, there are few empirical studies that actually assess this assumption. Hence the problem is that there is a lack of clear empirical evidence that demonstrates that knowledge management processes (sharing, retention, acquisition, codification, and creation) impact job satisfaction and in turn this satisfaction directly impacts job performance. It is important to verify this assumption. This is a problem because we cannot plan with certainty

knowledge management solutions and fund based upon the assumption that knowledge management will positively impact job satisfaction and performance. It is also unclear is if there are differences based upon not just job category but also the functional group that the knowledge worker resides. This could impact the ability to fund certain knowledge management initiatives especially if they are targeted towards a single function and could also impact the design of the knowledge management solution.

Dissertation Goal

The goal of this dissertation is to assess whether the knowledge management processes have a positive impact upon job satisfaction and job performance and if job satisfaction itself impacts job performance. A secondary goal is to examine if the results vary based upon demographic factors such as job classification, location or functional group.

Research Questions

The key research questions are:

Q1 – To what extent do knowledge management processes (acquisition, sharing, creation, codification, and retention) have an impact upon knowledge worker job satisfaction?

Q2 – To what extent does knowledge management processes (acquisition, sharing, creation, codification, and retention) have an impact upon knowledge worker job performance?

Q3 – To what extent does job satisfaction of a knowledge worker have an impact upon job performance?

Q4 - Do the impacts differ based upon location?

Q5 – Do the impacts differ based on a knowledge worker's functional group?

Q6 – Do the impacts differ based upon job classification (staff, experts, managers, top management)?

Relevance and Significance

The prior studies have shown that knowledge management processes, in varying degrees based on the findings of each study, impact job satisfaction; however, it is less clear what impact knowledge management processes have upon both job satisfaction and job performance. Many of the existing studies are focused upon a single location such as a municipality in Finland (Kianto et al., 2016), a municipal organization in Slovakia (Pruzinsky & Mihalcov, 2017), a city organization in Finland (Henttonen et al., 2016), a university in Jordan (Masa'deh et al., 2019) and others, all singularly focused. None of these studies examine multiple locations of a major organization or multiple organizations. Similarly studies found during the literature review look at the demographics of various job levels such as executive, managers, experts, staff, academic rank or similar by job roles. Studies show there are differences in outcomes when measuring top management, for example, versus regular staff but similar in some aspects which vary in other comparison between job levels (Kianto et al., 2016; Pruzinsky & Mihalcov, 2017). There is usually no discussion beyond the finding that there are differences. There were no instances found where the study assessed the impact by functional group such as HR, Marketing, and Finance. This is important since each function has its own specific knowledge management needs and typically requirements for funding knowledge management.

Prior studies have left a few issues either unaddressed or only partially addressed, including the examination of the links between knowledge management, job satisfaction and job performance, examining the role of knowledge management key processes and job satisfaction and job performance, examining differences based on location, functional groups, job level and additional demographic elements (Alias et al., 2018; Henttonen et al., 2018; Kianto et al., 2016; Kianto et al., 2019; Masa'deh, 2016; Masa'deh et al., 2019; Pruzinsky & Mihalcov, 2017). Prior studies have acknowledged and highlighted some of the shortcomings that still exist. Examining the links between knowledge management processes, job satisfaction and knowledge worker performance would be worthwhile topic for future research as well as studying the impact of job satisfaction on knowledge work performance (Kianto et al., 2016) with similar statements made in Pruzinsky and Mihalcova (2017). Alias et al. (2018) also recommended further research in examining the effects of knowledge management on an employee's job satisfaction. Kianto et al., (2019) suggested future research areas should examine knowledge management processes on productivity in light of demographics, as well testing the impact of knowledge management processes and other factors on job productivity.

Barriers and Issues

In order to conduct this study and collect the needed data for analysis requires the permission of the organization which can be difficult in the climate of privacy and security. The plan to mitigate this barrier is to utilize organizations, both past and current, in which the researcher is known. Since a web-based survey is planned to be used to collect the data, one issue is to be positioned to collect a reasonable sample size, across study and have some understanding of the aims of the study. A similar issue will exist if

the organization insists upon a paper based survey. Another barrier that must be overcome is gain the permission of Nova Southeastern University's (NSU) Institutional Review Board (IRB) for the survey.

Limitations, Delimitations and Assumptions

A major limitation of using a web-based survey instrument is the use of self-reporting as the major means of data collection. Self-reporting relies upon the individual to be truthful in their response and yet research studies have shown that participants may be biased towards what the participant sees as an acceptable answer, one that might be bias. There is also a risk that the participant interprets the question incorrectly or simply sees and responds based upon their level of maturity in their job. The study is focused on knowledge workers across multiple functions, which may have developed a local definition of knowledge management and since the study covers different functions within an organization there may be differences in location culture or functional culture. A key assumption is that the responses of the participants will be straightforward and truthful without any interference from other parties such as management of the company.

Definition of Terms

*Explicit kn*owledge: knowledge that is transmittable in formal, systematic language (Nonaka, 1994).

Key knowledge management processes: includes knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification, knowledge retention (Pruzinsky & Mihalcov, 2017).

Knowledge acquisition: is the practice focused upon the collection of information from both internal as well as external sources (Cohen & Levinthal, 1990).

Knowledge codification: is made up of various elements and activity needed to class/codify information into a form that is explicit, and to store the documented knowledge and provide the documented knowledge to users in the organization (de Jong & Roelofs, 2000).

Knowledge creation: refers to the ability to develop new, useful solutions and ideas from various aspects of the organization's activities include products , processes, services and practices (Teece, et al, 1997).

Knowledge management: is about creating, providing, enabling, and supporting an environment that allows individuals to use and share knowledge as well as create new knowledge, typically this involves computer applications/systems (Kianto, Vanhalla & Heilmann, 2016).

Knowledge sharing: is about how tacit knowledge is shared in the organization, including informal communications, mentoring, coaching, brainstorming, face to face communications and other means such as shared learning experiences (Nonaka & Takeuchi, 1995).

Knowledge worker: someone who adds value by processing existing information to create new information that could be used to define and solve problems (Drucker, 1959).

Job performance: is a measure of how well a set of tasks are done by an employee in a given job role (Petty et al, 1984).

Job satisfaction: Can be simply defined as to the extent that employees like (satisfaction) or dislike (dissatisfaction) their jobs (Spector, 1994).

List of Acronyms

EOU - Ease of Use

IS - Information Systems

KM - Knowledge Management

KMP - Knowledge Management Processes

KMS - Knowledge Management System

PLS - Partial Least Squares

Summary

The goal of this chapter is to introduce the research problem, and resulting research questions supported by background, research goal, relevance and significance, barriers and issues, and the potential limitations and delimitations of this research. The background provided indicates the shortcomings of studies in this area. The research goal focuses on what this study aims to accomplish. The research questions determined and shaped the literature review. The relevance and significance section supports the statement of the problem and research goal. The potential concerns of the successful completion of this study are addressed in the barriers and issues section. Limitations and delimitations are outlined and identify areas that are outside of control of the researcher. The definition of terms and acronyms are provided to provide clarity to terms utilized in this dissertation.

Chapter 2

Review of Literature

Introduction

Job satisfaction is one of most researched topics since the 1930's in organizational behavior, with much focused upon skill variety, job design, job variety, how the worker feels about their function and a host of other variables (Pruzinsky & Mihalcova, 2017; Alias et al, 2018). Job satisfaction can be seen as the gratification and fulfillment that one receives from doing their job (Masa'deh, 2016). Job satisfaction can also be defined simply as to extent to which people dislike or like their jobs (Spector, 1994). Job dissatisfaction is often defined as a negative judgement about one's job situation or dislikes (Henttonen et al., 2016). Job satisfaction is an accumulation of factors related to the job the individual performs, and if the employee feels success is possible. If people feel appreciated in their jobs, they develop positive attitudes and experience greater satisfaction. Any factor that allows for improved job performance therefore leads to higher job satisfaction (Pruzinsky & Mihalcova, 2017).

Knowledge management is about motivating and enabling knowledgeable individuals to use and share their knowledge with others by various means, often via modern information technology systems (Pruzinsky & Mihalcova, 2017). Some firms consider knowledge to be a strategic and valuable resource and strive to collect this information, to provide insights into processes, markets, customers or to satisfy other business needs (Alias et al., 2018). Knowledge management traditionally focused upon information and systems, but in more recent years, there is much more recognition of the roles of individuals in knowledge management processes, organizationally, and the ultimate

success or failure of knowledge management (Henttonen et al., 2016). People are seen as key such that if they are happy in their jobs, they will work systematically and are more creative and innovative (Alias et al., 2018). Knowledge management helps workers to derive value from knowledge and establish shared understanding (Mohrman et al., 2002).

However in the past only a few studies have linked knowledge management to job satisfaction (Lee & Chang, 2007; Koseoglu et al, 2010; Singh & Sharma, 2011). In more recent years there have been a handful of studies that have built upon the earlier works and focused on knowledge management processes and job satisfaction (Kianto, Vanhalla & Heilmann, 2016; Pruzinsky & Mihalcova, 2017; Henttonen, Kianto, & Ritala, 2016; Alias et al; 2018; Masa'deh, 2016; Masa'deh et al; 2019). Studies have examined five knowledge processes; knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification, and knowledge sharing and have determined that only knowledge acquisition and knowledge creation are not factors in job satisfaction. The remaining three knowledge management processes had connections to job satisfaction. Knowledge sharing was seen in these studies to be the key knowledge management process, which promoted job satisfaction for most employee levels (Kianto, Vanhalla & Heilmann, 2016; Pruzinsky & Mihalcov, 2017). Knowledge sharing and job satisfaction based on these findings have, have in turn, become an additional focus of job satisfaction studies (Henttonen, Kianto, & Ritala, 2016; Alias et al; 2018). Many of the studies which have focused upon the knowledge management processes (sharing, retention, acquisition, codification, creation) and job satisfaction have been studies based upon a single organization and the have focused upon occupational groups such as general employees,

experts, middle managers and top management within the organization (Kianto, Vanhalla & Heilmann, 2016; Pruzinsky & Mihalcov, 2017).

Knowledge Management

More than twenty-five years ago, it was asserted that knowledge is a key to marketplace distinction, effective competition and profitability. The challenge was for companies to organize in such a manner that they can discern commercial knowledge, find a means to store that information, then disseminate and make actual use of the information. This gave rise to cultural, operational and technical infrastructure, collectively now known as Knowledge Management. It was discovered that all companies in one form or another have knowledge based economies within the organization. It was concluded that without a formal system it was impossible for companies to manage the processes and data and gain a competitive advantage. Knowledge management was defined as a systematic underpinning, observations, measurements and optimization of various knowledge economies within a company. However without a formal system it was found impossible to manage the processes and ultimately gain a competitive advantage (Demarest, 1997; Nonaka & Takeuchi, 1995).

The ability of organizations to create, transfer and adopt knowledge rather than utilize efficiency allocations, will determine the organization's long-term performance (Prahalad & Hamel, 1990). Knowledge has been recognized as a key source of competitive advantage; however over time there have been both qualitative and quantitative changes in the vast amounts of data that can be collected and communicated as information but at the risk of an overload. There is a distinction between data and actual knowledge. Knowledge management describes a means to continually manage knowledge of all

kinds. It requires a firm-wide strategy that covers policies, implementation, continuous revision and monitoring such that information is available when and where it is needed. Culture, people, processes and technology are all considerations that must be included in any strategy. To achieve success the solution must handle both formal and informal information from a wide variety of sources. One must recognize that knowledge is a process, a set of relationships that must be considered, it is necessary to define and understand the processes involved (Quintas et al, 1997). Knowledge management is a collection of organizational practices and routines related to managing knowledge from external acquisitions or creation to the utilization internally of the organization and integration across the firm. A central element in this endeavor is the need for leadership (Pellegrini et al, 2020).

Lee and Choi (2003) acknowledged that many companies were beginning to manage organizational knowledge to achieve a sustained competitive advantage. While prior researchers had examined enablers, processes and performance of various knowledge management factors, there was a need to create a research model that would tie the various knowledge management factors together. To fill this gap their research resulted in the development of a model that included seven enablers; including trust, collaboration, learning, centralization, formalization, information technology support and specific knowledge skills of a domain. Collaboration, trust, learning and centralization were found to be strong predictors for knowledge creation. Organizational culture variables were necessary for knowledge creation. Collaboration was positively related with externalization, internalization and socialization. Centralization was negatively related to externalization, internalization and socialization. Trust was found to be a significant

predictor of all forms of knowledge creation modes. T-shaped skills and formalization of members did not significantly affect knowledge creation. IT support was seen as significantly related only to knowledge combination. Knowledge creation was positively connected with organizational creativity which is positively related to organizational performance. Hence an organization can achieve strategic benefits of knowledge management via effective knowledge creation.

As organizations realized there was economic value from their collection of knowledge assets, they discovered it difficult to transform their organization into a knowledge management enterprise. Gold et al., (2001) developed a knowledge management capabilities and organizational effectiveness model. In this model two main drivers in organizational effectiveness were knowledge infrastructure capabilities and knowledge process capabilities. Knowledge infrastructure capabilities consisted of three major components; technology, structure, and culture. Knowledge process capabilities consisted of four major components; acquisition, conversion, application and protection. The conclusion was that organizational capabilities are complex, especially in operationization. Gold et al., (2001) indicated that for an effective knowledge management solution, a firm requires a knowledge infrastructure of technology and structure, coupled with knowledge process architecture of acquisition, conversion, application and protection as essential organizational capabilities. Also recommended was that more studies and modeling would prove useful in managing knowledge management capabilities in organizations.

Mohrman et al., (2002) stated that in an economy based upon knowledge, a sustainable competitive advantage needs access to knowledge and then derives value

from that knowledge. The model showed that knowledge work behaviors (system performance focus, systemic processes, knowledge sharing, and refinements in approach) drove knowledge outcomes resulting in improved performance.

Knowledge that a business attains, creates and is disseminated in the organization must be supported by a means to store, authorize and share or else a business is constantly at risk of simply disremembering the knowledge that the firm acquired (Abbas et al., 2020).

Knowledge has been defined as the concepts, beliefs, truths, perspectives and concepts, judgments and know-how on a topic. This reflects the need to collect all required information concerning a topic or issue either gained from an external source or stored somewhere for retrieval. Knowledge whether on an individual level or on a collective level is important and in an organization is considered very important in gaining and maintaining a competitive advantage. An organization needs to meet the needs of the various individual users and have the ability to management its knowledge and resources (Al-Jedaiah, 2020).

In the early days much of the knowledge management focus was upon information perspectives and the technology of information systems and solution (Davenport et al, 1998). Studies drove additional research and refinement into knowledge management especially in acknowledging it more than just technology and information perspectives, but also about the human component (Stenmark, 2001). The key to successfully managing knowledge involves individuals with knowledge within the organization and is dependent upon the connections between individuals within the organization (Dermott, 1999; Spender & Grant, 1996). Research showed the importance of people and human

related factors are important priorities in processes of knowledge management within the organization and play a key role in an organization's performance and competitive advantage (Andrews & Delahaye, 2000; Wang & Noe, 2010).

Knowledge management processes have been examined and discussed over a number of years. Demarest (1997) specifically identified four key knowledge management processes: knowledge construction, knowledge embodiment, dissemination and use. Another study identified knowledge creation, incorporation and dissemination as key processes (Nonaka & Takeuchi, 1995). Other studies showed knowledge creation, knowledge storage/retrieval, knowledge transfer and knowledge application as keys processes (Alavi & Leider, 2001). Another study grouped processes into three distinct groups; work processes, management processes and technology processes (Mohrman et al., (2002).

As the literature has evolved, studies have identified between four and six key knowledge processes (Puzinsky & Mihalcova, 2017). Gold et al., (2001) identified four key processes including; acquisition, conversion, application and protection as well as three knowledge infrastructure capabilities of technology, structure and culture. Lee and Choi (2003) described creation, sharing, storage and usage as typical key knowledge management processes. Masa'deh et al., (2017) identified seven key processes. This included knowledge identification, knowledge creation, knowledge collection, knowledge organizing, knowledge storage, knowledge dissemination and knowledge application). A more recent study identified five processes which include create knowledge, capture knowledge, refine knowledge, management knowledge and disseminate knowledge (Al-Jedaiah, 2020).

Kianto, Vanhalla and Heilmann, (2016) and Pruzinsky and Mihalcov, (2017) have used five key knowledge processes; knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification, and knowledge sharing. Some other studies have identified these five key processes but more closely focused specifically on knowledge sharing (Henttonen, Kianto, and Ritala, 2016; Alias et al; 2018).

Organizations allocate and maximize resources to better manage their knowledge diversity to improve or enhance their organizational performance. Poor knowledge management can cause business process failures within a company. Knowledge needs to be managed to support business processes in an organization (Nurdin & Yusuf, 2020).

Job Satisfaction

A much researched topic for almost 100 years, job satisfaction has been studied through a variety of lenses. From an organizational behavior, studies focused upon skill variety, job design, job variety, how the worker feels about their function and similar variables, resulting in many explanations. In 1969, one study concluded that despite the interest in the study of job satisfaction and dissatisfaction for years, understanding of topic had not kept pace with research efforts. The major reason for this lack of progress was the prevailing view of correlation without an explanation and more a more conceptual approach to the problem was needed (Locke, 1969). In another study job satisfaction, was closely associated with the supportive and innovative cultural dimensions of an organization, but inhibited by bureaucratic dimensions (Odom et al, 1990).

To an extent that an employee feels positively or negatively about their job, influences many factors including employee motivation, and commitment to the

organization (Odom et al., 1990; Spector, 1997). The positive or negative feelings about the job also influence the individual's quantity and quality of their work (Petty et al., 1984; Spector, 1997: Judge et al., 2001). To some degree job satisfaction can also be defined simply as to extent to which people dislike or like their jobs (Spector, 1994).

Job satisfaction can be viewed to the degree that the employee takes pleasure in their work or the emotional state of an employee's job performance after an appraisal (Shaikh et al., 2012). Job satisfaction can be seen as the gratification and fulfillment that one receives from doing their job (Masa'deh, 2016). Job satisfaction can be defined as a positive mental state from work (Sun & Yun, 2021). Job satisfaction is also when a employee has a sense that he has a job that meets all of his expectations (Gopinath & Kalpana, 2020).

Job dissatisfaction is often defined as a negative judgement about one's job situation or dislikes (Henttonen, Kianto, & Ritala, 2016). Job satisfaction is an accumulation of factors related to the job the individual performs, and if the employee feels success is possible. If people feel appreciated in their jobs, they develop positive attitudes and experience greater satisfaction. Any factor that allows for improved job performance therefore leads to higher job satisfaction (Pruzinsky & Mihalcova, 2017). In a study of intrinsic and extrinsic job satisfaction, the research showed that organizational motivation is the result of personal motivation. Like a mirror when staff motivation is high then the organizational motivation will be high hence high job satisfaction has a positive impact on the organization (Bektas, 2017).

There are many factors that may influence job satisfaction. In one study it was discovered that men are less satisfied about the aspects of their jobs, job satisfaction is U-

shaped according to age (young and older workers are happier, than those in between), better educated are less satisfied, health problems reduces job satisfaction, higher income equates to higher satisfaction, long hours reduces satisfaction, larger establishment have lower satisfaction, union members are less satisfied than non-union, employees who feel their job is secure have higher levels of job satisfaction, sales employees are less satisfied than others, and unmarried employees display more job satisfaction. Employees who had job training had higher satisfaction than those that did not. There were also differences depending on the worker's industry Gazioglu & Tansel, 2006).

One of the most important and long lasting theories of job satisfaction is Herzberg's two-factor theory. In one study the researchers explained that there are two categories of factors: one is hygiene factors that are focused on avoiding unpleasantness, including factors dealing with interpersonal relationships, salary, policies and administration, supervision and working conditions. The other category is motivation factors which include advancement, work itself, possibilities of growth, responsibility, recognition and achievement. The researchers concluded that motivation factors are more important than hygiene factors and that Herzberg's theory is, and remains, one of the most significant theories related to job satisfaction (Alshmemri et al., 2017).

Job satisfaction is a major key of employees' behavior in performing their tasks and their level of productivity, impacts level of absenteeism, job turnover, employee relations and responses to management requests (Hussin & Mokhtar, 2018). Other factors also influence job satisfaction including the scope of work, compensation, job promotion possibilities, co-workers, job environment and management. Demographics also have influence such as age, gender, education, personal stability and other factors (Kianto et

al., 2016; Scarpello & Campbell, 2006). Another study showed that key factors impacting job satisfaction are job influence, career opportunities, teamwork and the challenges of the job itself (Ali & Anwar, 2021).

Knowledge Management and Job Satisfaction

Over the years despite the growing importance of knowledge management in a knowledge based economy, there were relatively few studies done linking knowledge management with job satisfaction (Kianto, Vanhalla & Heilmann, 2016; Masa'deh et al; 2019).

One of the first early studies was an empirical study which examined job satisfaction and knowledge management of Taiwanese public listed electric wire and cable organizations. This study showed positive mutual linkages between and knowledge management and job satisfaction (Lee & Chang, 2007). Another early paper looked at knowledge sharing practices, employee learning commitments, employees' adaptability and job satisfaction in an empirical study of 91 listed manufacturing companies in Jordan. Out of 273 questionnaires which yielded 160 completed responses showed that there is a significant relationship between knowledge sharing practices and employees' job satisfaction as well as learning commitments and adaptability (Almahamid et al., 2010). In a study of Indian telecommunications industry knowledge management and its antecedents was examined for impact on employee satisfaction. The results of the study showed a positive correlation between knowledge management and employee satisfaction (Singh & Sharma, 2011). However another empirical study of knowledge management (knowledge transfer and knowledge sharing), job satisfaction and organizational communications in a five star hotel in Turkey did not find any connection between

knowledge management and job satisfaction (Koseoglu et al., 2010). After these studies, the then existing research on the connection between knowledge management and job satisfaction appeared to be few in number and inconclusive until several years passed.

In subsequent years the connection between knowledge management and job satisfaction was examined in more frequency and depth. Trivellas et al. (2015) studied the impact of knowledge sharing and job satisfaction in accounting firms in Greece and concluded that employees who worked in a knowledge sharing environment and shared information were more likely to have higher job satisfaction and be more effective. Another study examined the impact of knowledge management and five processes; knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification, knowledge retention, on job satisfaction in a Finnish municipal organization. Of the five processes examined, knowledge and knowledge creation were not factors affecting job satisfaction. The three processes of knowledge sharing, knowledge codification and knowledge retention had connections to job satisfaction. Knowledge sharing, a key KM process, was a strong promoter of job satisfaction. The study also pointed out that knowledge management processes has the strongest impact upon middle managers and the least on senior management (Kianto et al., 2016).

Knowledge management infrastructure (organizational culture, organizational structure, and information technology) was also examined on the impact on job satisfaction in a five star hotel in Jorden. A total of 216 respondents reported in the study and the findings were that knowledge management infrastructure had an impact on job satisfaction, especially organizational culture and information technology but organizational structure did not have a significant impact. The study also found that there

were significant difference due to age, educational level and personal income (Masa'deh, 2016).

Pruzinsky and Mihalcova (2017) used a web-based survey instrument to examine how knowledge management could improve job satisfaction in a Slovakian municipal organization and how it influences job satisfaction among individual employees in their job. Five facets of knowledge management were examined: knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification and knowledge retention. The results of the study conclude that neither knowledge acquisition nor knowledge creation were factors that affected job satisfaction. Knowledge sharing was the key knowledge management process of the five utilized in the study, which promoted job satisfaction for most of the employee groups. Knowledge codification also promoted job satisfaction as did knowledge retention, but both to a lesser degree than knowledge sharing. The researchers concluded that the existence of some knowledge management processes is linked to high job satisfaction.

Another study examined whether the existence of knowledge management in a knowledge worker's work environment impacted the knowledge worker overall satisfaction and if job satisfaction lead to greater innovation performance. The results showed that satisfaction of the knowledge worker mediates between two management processes of knowledge sharing and knowledge creation, and innovation significantly (Shujahat et al., 2018).

Arif & Rahman (2018) examined the knowledge managements and job satisfaction connection by reviewing scholarly articles on the topic across a variety of industries. They discovered job satisfaction appears with knowledge management across industries.

The analysis showed that knowledge management positively correlated with job satisfaction in varying degrees across the majority of the scholarly articles.

Knowledge management is often seen to be an important ingredient in creating a competitive advantage. However adoption of knowledge management is not done evenly on a global basis, some countries are more lacking than others, as an example, in one study, Malaysia was deemed slower than others. This study focused on a literature review and some conceptual framework. Based upon this the researchers concluded that there was a significant relationship between job satisfaction and four knowledge management processes; knowledge retention, knowledge acquisition, knowledge sharing, knowledge creation. The researchers recognized that the level of the relationships varied based upon the individual studies and recommended further research (Alias et al., 2018). There is some agreement among researchers that knowledge management with all of its various facets (cultural, structural, technological, processes) have, to varying degrees depending on the study, an impact upon job satisfaction. One finding is that the effects of demographic factors upon job satisfaction is mixed and require more research (Masa'deh et al, 2019).

Jin et al., (2020) in a study of the impacts of knowledge management on job satisfaction and intellectual (job class) level of work found that all five facets of knowledge management processes; knowledge sharing, knowledge retention, knowledge acquisition, knowledge codification, and knowledge creation all had positive impact on job satisfaction for all members of the organization. However the greatest job satisfaction impact of knowledge management was seen on front line workers, then experts, middle management and finally top management. Middle management put more importance on

knowledge creation, experts on knowledge sharing, front-line workers put more importance on knowledge acquisition and codification and top management valued knowledge retention.

In a study of knowledge management processes and knowledge worker satisfaction in higher education institutions in Pakistan researchers found that knowledge management processes strongly enhance worker satisfaction and that the internal marketing of knowledge management had a substantial influence on knowledge management processes (Sahibzada et al; 2020). Researchers also examined the impact of knowledge management processes on job satisfaction and employee retention of pharmaceutical and chemical companies listed on the stock exchange in Bangladesh. The study found that knowledge management processes had a positive and significant impact on job satisfaction and that job satisfaction has a significant impact on employee retention (Ratan et al; 2020). Mia and Chowdhuary (2021) examined the impact of knowledge management strategies upon job satisfaction in garment organizations in Bangladesh found that knowledge management strategies can increase employee satisfaction and therefore the firm can use the strategies to retain employees.

Hasballah, (2021) examined the impact of knowledge management on job satisfaction and the impact on knowledge management on performance of lecturers as well as the impact knowledge management on performance through job satisfaction and determined that knowledge management had impact on job satisfaction and knowledge management had a significate effect on performance through job satisfaction.

Surprisingly there is little to no mention in studies about the differences in impact of knowledge management and job satisfaction by differing functional group such as HR,

Marketing, and Finance. This is important since the possibility exists that various functional groups will have differing needs, views of knowledge management and perhaps be seen differently in terms of importance in the organization especially when funding is discussed.

Knowledge Management and Job Performance

Many studies of knowledge management and job satisfaction make assumptions that job satisfaction leads to better job performance but do not directly measure or test this assumption. Instead, the researchers rely on other studies that show, in general, job satisfaction ultimately leads to higher job performance citing other research (Judge et al., 2001; Springer, 2001; Shaikh et al., 2012).

In the study done by Kianto et al., 2016, this limitation is directly addressed as an area for future research. In another paper the lack of studies about job performance is seen as a limitation as well, and the researchers again rely upon the assumption that job satisfaction leads to better job performance (Pruzinsky & Mihalcova, 2017). Another study, simply implied that higher job satisfaction would lead to improved job performance without stating it was an assumption (Hussin & Mokhtar, 2018). Similarly other studies took the same approach (Alias et al., 2018; Arif et al., 2018; Masa'deh et al., 2019; Purba et al., 2020). Shujahat et al. (2017) forthrightly stated that the study ignored the interrelationships between knowledge management processes, and the impact upon job satisfaction of workers and their job productivity.

However in one study that focused specifically upon the single knowledge management process of knowledge sharing, and the impact upon performance and satisfaction, the study showed that knowledge sharing propensity lead to knowledge

sharing behavior and that behavior led to improved individual job performance (Henttonen et al., 2016). In another study of the impact of knowledge sharing culture and job satisfaction it was determined that the knowledge sharing culture improved employees competency and job satisfaction (Trivellas et al., 2015).

Research into the impact of knowledge management on job performance in higher education at the University of Jordan showed that there were linkages between knowledge management processes, knowledge management performance and job performance, however the researchers pointed out that limitations of the connection shown in the study between knowledge management and job performance and that more study is needed (Masa'deh et al., 2015). In another study examining knowledge worker productivity in five mobile telecom companies in Pakistan, the study concluded that knowledge creation and knowledge utilization impact knowledge worker productively positively however knowledge sharing did not have an impact on knowledge worker productivity (Kianto et al., 2018). Soe and Aye (2020) found that knowledge sharing, knowledge application and knowledge retention significantly impacted employee work experience partially mediated by job satisfaction of employees.

In another study of the role of job satisfaction in relationship between knowledge management, transformational leadership, work environment and performance in the packing industry in Indonesia, the researchers found that transformational leadership and knowledge management did not significantly impact employee performance however work environment had a significant effect on performance, with knowledge management acting as a mediator (Singgih et al; 2020).

Summary of What is Known and Unknown in Literature

In the early years knowledge management focused upon information and systems but today it is more recognized that the roles of individuals are important in the ultimate success or failure of knowledge management (Henttonen et al., 2016). It was shown that there is some impact of knowledge management upon job satisfaction, as seen in early studies (Koseoglu et al., 2010; Lee & Chang, 2007; Singh & Sharma, 2011). Later studies were more specifically focused on knowledge management processes and job satisfaction and typically these studies examined five knowledge processes; knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification, and knowledge retention (Alias et al.; 2018; Henttonen et al., 2018; Kianto et al., 2016; Masa'deh, 2016; Masa'deh et al.; 2019; Pruzinsky & Mihalcova, 2017).

Knowledge management helps employees to derive value from knowledge and establish shared understanding (Mohrman et al., 2002). Knowledge management is about enabling knowledge to be used and shared with others by various means (Lee & Choi, 2003; Pruzinsky & Mihalcova, 2017). Knowledge is recognized by many firms to be a strategic and valuable resource (Alias et al., 2018).

Job satisfaction has been one of most researched topics since the 1930's. Much of the focus has been upon skill variety, job design, job variety, how the worker feels about their function and other variables (Alias et al., 2018; Alshmemri et al., 2017; Pruzinsky & Mihalcova, 2017). Job satisfaction is defined as the gratification and fulfillment that one receives from doing their job (Masa'deh, 2016). It has been recognized that when individuals are happy in their jobs, they will work systematically and be more creative and innovative (Alias et al., 2018). Job satisfaction is an accumulation of factors related

to the job the individual performs, and if the employee feels success is possible. If people feel appreciated in their jobs, they develop positive attitudes and experience greater satisfaction. Any factor that allows for improved job performance therefore leads to higher job satisfaction (Pruzinsky & Mihalcova, 2017). Job dissatisfaction is often defined as a negative judgement about one's job situation or dislikes (Henttonen et al., 2016).

Some researchers have found connections between specific knowledge management processes and job satisfaction with some variability in findings on which of the processes have a strong connection with various employees within a single organization (Alias et al.; 2018; Henttonen et al., 2018; Kianto et al., 2016; Masa'deh, 2016; Masa'deh et al.; 2019; Pruzinsky & Mihalcova, 2017). Knowledge sharing was seen in a number of the studies to be the key knowledge management process which promoted job satisfaction for most employee levels, (Alias et al., 2018; Henttonen et al., 2016; Kianto et al., 2016; Pruzinsky & Mihalcov, 2017). However other processes including knowledge codification and knowledge retention were also seen as factors, while some studies determined that knowledge creation and acquisition had limited influence on job satisfaction ((Alias et al., 2018; Kianto et al., 2016; Masa'deh, 2016; Masa'deh et al.; 2019; Pruzinsky & Mihalcova, 2017; Shujahat et al., 2018).

Differences were also noted in the percentages of job satisfaction derived from the various processes depending upon the employee group and also found that there were employee levels/positions determined that knowledge creation and knowledge sharing impacted job satisfaction and innovation. Pruzinsky & Mihalcov (2017) noted that the

lack of impact on job satisfaction by knowledge creation and acquisition process could be due to the nature of the work.

In the vast majority of studies done it was presumed by the researchers that job satisfaction led to higher performance but they did not actually build job satisfaction into their theoretical model and hence did not test for it. There have been relatively few studies that examine the connections between knowledge management, job satisfaction and job performance. Many of the research studies simply do not directly address the potential connection between job satisfaction and job performance or they assume that a connection exists (Alias et al., 2018; Henttonen et al., 2018; Kianto et al., 2016; Masa'deh, 2016; Masa'deh et al., 2019; Pruzinsky & Mihalcova, 2017). This assumption is based upon older studies, not involving knowledge management, on the consequences of job satisfaction in which prior researchers found a link between job satisfaction and job performance (Judge et al., 2001; Springer, 2001).

These studies and a literature review indicate that there are specific issues which were not completely reviewed or otherwise addressed. This has created a gap in the literature which is the focus of this proposed study.

The problem is that there is a lack of clear empirical evidence that demonstrates that knowledge management processes (sharing, retention, acquisition, codification, and creation) impact job satisfaction and in turn this satisfaction directly impacts job performance. It is important to verify this assumption. This is a problem because we cannot plan with certainty knowledge management solutions and fund based upon the assumption that knowledge management will positively impact job satisfaction and performance. It is also unclear is if there are differences based upon not just job category

but also the functional group that the knowledge worker resides. This could impact the ability to fund certain knowledge management initiatives especially if they are targeted towards a single function and could also impact the design of the knowledge management solution.

Summary

The goal of this chapter is to review the literature examining past studies done on knowledge management, job satisfaction, and job performance. The introduction provides the background of the topic and issues. The section on knowledge management provides insights on the broad topic of knowledge management and its growing importance. The section on job satisfaction shows it as a much researched area, with definitions based on the study of what is job satisfaction. The ties between knowledge management and job satisfaction are discussed as are the ties between knowledge management and job performance. The conclusion of the literature review reveals studies of knowledge management, knowledge management processes and the relationships to job satisfaction and job performance are mixed.

Chapter 3

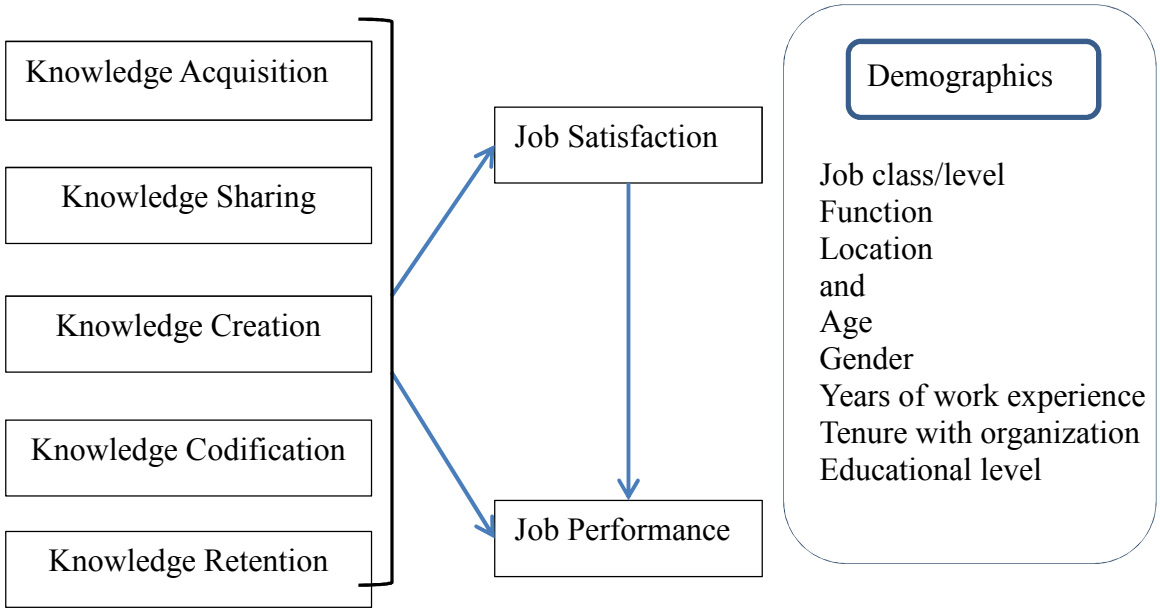
Methodology

Research Approach

The research design utilized a survey-based, Structured Equation Modeling – Partial Least Squares (SEM-PLS), cross sectional quantitative study (Kianto et al., 2016; Sekaran & Bougie, 2016), which examined knowledge management workers in one organization with several locations in the United States and elsewhere. In this study, the model used is shown below:

Figure 1

Research Model



In this model, knowledge acquisition, sharing, creation, codification and retention are all independent variables, with job satisfaction and job performance as each a dependent variable potentially impacted by the five knowledge management processes. Also studied is job satisfaction as an independent variable with job performance as a

dependent variable to address the question of whether job satisfaction directly impacts job performance.

Demographic variables in the study include:

- Job level - top management, middle managers, supervisors, experts and employees
- Functions – Sales/Service, IT/IS, Research & Development (R&D), Operations/Manufacturing, Finance, Marketing, HR, General Business Services (GBS), Other.
- Location - office location, home based, or Outside North America

These additional demographics were also collected:

- Age - chronological individual age
- Gender - male, female, binary
- Years of work experience - measured in years
- Tenue - length of employment with organization
- Education - high school, some college, Associates, Bachelor, Masters, Doctorate, other

The use of selected demographics allowed for additional insights into the relationship between knowledge management processes and both job satisfaction as well as job performance.

The key research questions addressed are:

Q1 – To what extent do knowledge management processes (acquisition, sharing, creation, codification, retention) impact upon knowledge worker job satisfaction?

Q2 – To what extent does knowledge management processes (acquisition, sharing, creation, codification, retention) impact upon knowledge worker job performance?

Q3 – To what extent does job satisfaction of a knowledge worker have on job performance?

Q4 - Do the results differ based upon location?

Q5 – Do the results differ based on a knowledge worker's functional group?

Q6 – Do the results differ based upon job classification (staff, experts, supervisors, middle managers, and top management)?

Based upon the literature review it is suggested that employees will be more satisfied with their jobs to the degree that they experience knowledge management processes in their work environment and similarly their job performance. Also, this study suggests that employees that are satisfied with their jobs will have higher job performance. The argument can be divided into more specific hypotheses:

H1 - Knowledge acquisition will positively impact worker job satisfaction.

H2 - Knowledge sharing will positively impact worker job satisfaction.

H3 - Knowledge creation will positively impact worker job satisfaction.

H4 - Knowledge codification will positively impact worker job satisfaction.

H5 - Knowledge retention will positively impact worker job satisfaction.

H6 - Knowledge acquisition will positively impact worker job performance.

H7 - Knowledge sharing will positively impact worker job performance.

H8 - Knowledge creation will positively impact worker job performance.

H9 - Knowledge codification will positively impact worker job performance.

H10 - Knowledge retention will positively impact worker job performance.

H11 - Job satisfaction will positively impact worker job performance.

H12 - The impact of knowledge management processes on job satisfaction will vary based upon employee job level.

H13 - The impact of knowledge management processes on job performance will vary based upon employee job level.

H14 - The impact of knowledge management processes on job satisfaction will vary based upon the location of the employee.

H15 - The impact of knowledge management processes on job satisfaction will vary based upon the function of the employee.

Knowledge management is recognized as consisting of several knowledge management processes which include knowledge creation, acquisition, sharing, codification and retention as well as specific infrastructure, capabilities and management that support the knowledge management process (Lee & Choi, 2003). Knowledge creation examines the basis of new idea development and the frequency. Knowledge sharing looks at the horizontal knowledge flows inside the organizational knowledge management community. Knowledge codification identifies storage amounts and documentation. Knowledge acquisition examines the fluency and importance of knowledge acquired outside the organization. Knowledge retention looks at the continuity and preservation of knowledge within the organization and the scope of the repositories (Kianto et al., 2016; Pruzinsky & Mihalcov, 2017). Conceptually, this study plans to build upon the prior work using a similar framework of some of the more recent studies (Jin et al., 2020; Kianto et al., 2016; Pruzinsky & Mihalcova, 2017).

Participants

This study targeted employees, two hundred and twenty five participated, who

perform duties as knowledge workers across all levels within the organization. In order to conduct this research, permission from the organization was required and the cooperation of the employees' management secured. The organization was asked to provide access to the appropriate employees within their firm. All participants consented in order to take part in the study. The consent was part of the survey instrument. All participants needed and had access to computers with the internet capability to participate in the study.

This study utilized multiple locations of a large organization with a focus on North America and unlike prior studies examined the functional groups of the participants. Also examined was the impact of knowledge management processes on job satisfaction and job performance of the knowledge worker, as well as the direct impact of job satisfaction upon job performance. Past studies have neglected to examine multiple locations of an organization, looked at job classifications but not functions, and have assumed a connection between job satisfaction and job performance. This study built upon the prior research studies about knowledge workers and factors that impact their job satisfaction and job performance towards furthering understanding and insights.

Previous studies that conducted similar surveys varied in size of participants from several hundred to over eight hundred participants. Statistical power analysis is one means to determine what size sample would be useful (Cohen, 1992). GPower is a general power analysis program that is interactive, menu driven program for personal PC and Macintosh computers. This software performs various statistical power analyses for most common statistical tests. A number of versions of this software have been developed over the years (Erdfelder et al, 1996). Utilizing G*Power Version 3.1.9.7, it

was calculated that a minimum sample size of 89 would be required in this study. A total of 225 people actively participated in this study which clearly exceeded the minimum.

Instrumentation

The study utilized a survey instrument to gather data asking respondents to address a set of questions on a Likert scale of 1 to 7 with 1 meaning strongly disagree and 7 meaning strongly agree. The questions were drawn from the Organizational Renewal Capability Inventory survey (Kianto, 2008) which other researchers have modified and utilized (Kianto et al., 2016; Pruzinsky & Mihalcov, 2017). The Organizational Renewal Capability Inventory survey has been utilized by a number of researchers and is cited over 130 times and was developed in 2008 (Kianto, 2008) and recently used in 2020 (Jin et al., 2020).

Kianto (2008) describes the development of a survey instrument, and how it was tested for validity and reliability. It provides a systematic technique for collecting, analyzing and interpreting data. The basis is a survey that groups first by a major category, as an example, strategic competence and then into subcategories such as strategic flexibility, or competitive surveillance then for each of the subcategories specific statements that are then scored based on a Likert scale, as an example under Strategic flexibility a statement of "we are good at sensing future trends and the development of the market" is an example of a statement in the Kianto survey to be scored.

In this study the major category would be knowledge management processes, with subcategories, as an example, knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification and knowledge retention. A series of specific

statements for each subcategory were used. The specific questions regarding knowledge management processes, job satisfaction and job performance were drawn from other studies and are mapped below in Table 1.

Table 1

Survey Instrument Sources

Concept	Item	Source
Knowledge Acquistion	I easily find information needed in my work from sources outside my organization.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	I get much important information from collaboration partners outside my organization.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
Knowledge Sharing	Communications with other members of my work group is efficient and beneficial.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	My colleagues are open and honest with each other.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Our staff is interactive and exchange ideas widely across the organization.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	I find it easy to communicate and co-operate with employees from other organizational units	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	There is mutual understanding between the various organizational units and functions.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Our staff shares information and learns from each other.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Different opinions are respected and listened to in the organization.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
Knowledge Creation	Information about the status, results and problems of different projects is easily available	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Employees are encouraged to seek information actively outside the organization.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	My organization constantly gathers information about the external operating environment	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Our organization actively collects development ideas	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Our organization develops new methods for sharing knowledge (e.g. blogs, discussion forums) and encourages using them.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Middle management facilitates sharing knowledge between staff and top management	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Customers often participate in our innovation processes (i.e., in developing a new product or	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	We have learning groups, where members can discuss their work experiences and problems.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017

Table 1 - continued

Knowledge Codification	I easily find the documents and files needed in my work.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Previously made solutions and documents are easily available.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Electronic communication (e.g., e-mail) is smooth in my work.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Our organization has efficient and appropriate information systems.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Information systems are exploited efficiently	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
Knowledge Retention	When an experienced employee leaves, they are encouraged to transfer and distribute their knowledge to others.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	Mentoring and coaching are used for familiarising new employees to their tasks.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	This organization encourages sharing information with colleagues.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
Job Satisfaction	I enjoy my work very much	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	I can recommend my employer to others.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
	There is a lot of room for improvements in the general satisfaction of our work community.	Kianto et al., 2016; Pruzinsky & Mihalcov, 2017
Job Performance	How good are you in your work compared to your colleagues?	Henttonen et al., 2016
	How effective are you in your work compared to your colleagues?	Henttonen et al., 2016
	How would you estimate the quality of your work compared to your colleagues?	Henttonen et al., 2016
	How creative you are in your work compared to your colleagues?	Henttonen et al., 2016
	How good is your collaboration ability when compared to your colleagues?	Henttonen et al., 2016
Adapted from "Development and validation of a survey instrument for measuring organisational renewal capability" by A. Kianto, 2008, International Journal of Technology Management, 42(1-2), p. 69 and "Job satisfaction survey" by P.E. Spector, 1994 P. E. (1994). University of South Florida, Tampa, FL.		

A web-based questionnaire was utilized to address the five key processes of knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification, knowledge retention, plus job satisfaction, and job performance. This study requested demographical information from participants, such as tenure, age, gender, and added questions of job classification, location and function of the participant (Kianto et al., 2018; Pruzinsky & Mihalcov, 2017).

A web-based survey proved acceptable to targeted organization and met their corporate preferences. Survey Monkey, a web-based tool was used in this study. Survey Monkey is a valid and widely used survey tool, which also has statistical analytical tooling built into the software.

This approach yielded insights and data that were used to address the research problem. It utilized prior research approaches in terms of the web-based questionnaire instrument structurally based upon the Organizational Renewal Capability Inventory Survey with questions based upon prior studies as previously noted in Table 1. As part of the survey, the study collected from participants, demographical information include job classification; employee, expert, supervisors, middle management and top management. Participants were asked to identify their function within their company and their location. Also included were questions regarding the participant's tenure with organization, total years of experience, age, gender, and education.

Approval from the Institutional Review Board at Nova Southeastern University was obtained to conduct this study and use a questionnaire (Appendix A). The survey instrument is shown in Appendix B.

In order to assess the research model and survey, a series of actions were required. The first step was to assess the reliability and validity of the model using correlation analysis checking the connections between the knowledge management processes and job satisfaction, between job performance and the knowledge management processes. Additionally internal consistency and discriminant validity were assessed. For this study the plan was to use Smart PLS which was procured in concert with Survey Monkey tooling, and this was to perform analysis. Content validity was checked by reliance upon utilizing measures and items that were previously utilized in other studies and based upon The Organizational Renewal Capability Inventory Survey that has been widely deployed (Kianto, 2008). A number of other researchers have made use of this survey with modifications (Kianto et al., 2016; Pruzinsky & Mihalcov, 2017).

Data Collection

Approval for the survey from the targeted organization was needed and was secured prior to commencing data collection. The targeted organization was known to me, and the most senior executives, who granted permission, were known from my professional life in the industry. Once this approval was obtained, the data collection portion of the study commenced. The research data were collected from the organization based in the United States via a web-based survey utilizing Survey Monkey as the technology tooling.

Data Analysis

In this study Survey Monkey was utilized to assist in organizing and screening the data before conducting analysis. The data reliability, content, and validity of the model was analyzed and determined to be valid using Smart PLS (PLS-SEM) software.

Partial Least Square- Structured Equation Modeling (PLS-SEM) was

utilized to conduct the actual analysis. This study utilizes PLS-SEM (Smart PLS as a tool) for analysis as it provides a means to predict the various independent variables impact upon the dependent variable. PLS has been widely used in previous studies in this area (Henttonen et al., 2018; Kianto et al., 2016; Masa'deh et al.; 2019; Pruzinsky & Mihalcova, 2017).

PLS-SEM as a research method is recommended for use for a variety of reasons including when the analysis is concerned with testing a theoretical framework from a prediction perspective and when the structural model is complex and includes many constructs, indicators and model relationships. It is a valuable method when conducting research with causal relationships (Hair et al; 2019). Smart PLS software was utilized to test hypotheses 1 to 15 in this study.

Summary

This chapter provides the research approach utilized to address whether the knowledge management processes have a positive impact upon job satisfaction and job performance and if job satisfaction itself impacts job performance. This study is a survey based, SEM-PLS, cross sectional quantitative study based, in part, on the methods utilized by prior researchers in knowledge management (Kianto et al., 2016; Sekaran & Bougie, 2016). The study examined demographic variables including job level, location and functional department of the participants. This chapter also shows how participants were recruited from multiple locations of a large (mostly US) organization, and shows the means of using a survey questionnaire and how it was administered for data collection. Discussion of the survey instrument including a copy of the survey and the sources for the structure and statements that were within the survey are also addressed in this chapter.

This chapter also discusses the means used to administer the survey questionnaire, how reliability and validity were managed, and how data analysis was performed.

Chapter 4

Results

Introduction

This chapter provides the results of the data that were collected and analyzed to assess whether the knowledge management processes have a positive impact upon job satisfaction and job performance and if job satisfaction itself impacts job performance. A secondary goal is to examine if the results vary based upon demographic factors such as job classification, functional group and location.

The following hypotheses were tested:

H1 - Knowledge acquisition will positively impact worker job satisfaction.

H2 - Knowledge sharing will positively impact worker job satisfaction.

H3 - Knowledge creation will positively impact worker job satisfaction.

H4 - Knowledge codification will positively impact worker job satisfaction.

H5 - Knowledge retention will positively impact worker job satisfaction.

H6 - Knowledge acquisition will positively impact worker job performance.

H7 - Knowledge sharing will positively impact worker job performance.

H8 - Knowledge creation will positively impact worker job performance.

H9 - Knowledge codification will positively impact worker job performance.

H10 - Knowledge retention will positively impact worker job performance.

H11 - Job satisfaction will positively impact worker job performance.

H12 - The impact of knowledge management processes on job satisfaction will vary based upon employee job level.

H13 - The impact of knowledge management processes on job performance will vary based upon employee job level.

H14 - The impact of knowledge management processes on job satisfaction will vary based upon the location of the employee.

H15 - The impact of knowledge management processes on job satisfaction will vary based upon the function of the employee.

After IRB approval was obtained and permission from the targeted organization was secured, the web based survey was administrated via Survey Monkey. The data was collected during two weeks of March, across the targeted organization using the company's Yammer groups to solicit responses to the survey. A total of 225 people completed the survey.

Demographically, the data was analyzed and reviewed by gender, age, job level, education, and years of work experience, tenure with the organization, function and also location.

The respondents were broken down as 55% male and 45% female.

Table 2

Gender

Gender		
Female	45.33%	102
Male	54.67%	123
Other	0	0
Total		225

The ages were distributed as 18 to 24 (1%), 25 to 34 (9%), 35 to 44 (16%), 45 to 54 (34%), 55 to 64 (36%), 65+ (4%). The ages of 45 to 64 account for a majority of the respondents.

Table 3

Age of Participants

Age		
18-24	0.89%	2
25-34	8.89%	20
35-44	16.44%	37
45-54	33.78%	78
55-64	35.56%	80
65+	4.44%	10
Total		225

The job levels ranged from Senior Management (7%), Middle Management (26%), Supervisor (2%), Expert (28%) and Employee (38%). Experts and Employees accounted for more than a majority of the positions, however this would be expected since managers and supervisors oversee multiple staff.

Table 4

Job Level

Job Level		
Senior Management	6.70%	15
Management	26.34%	59
Supervisor	1.79%	4
Expert	27.68%	62
Employee	37.50%	84
Total		224

Educationally most of the respondents had a Bachelor's degree (41%) or Masters (31%), although the range in education levels including High School (3%), some college (11%), Associates (10%), Doctorate (3%) and other (2%).

Table 5

Education

Education		
High School	3.11%	7
Some College	10.67%	24
Associates	10.22%	23
Bachelors	40.89%	92
Masters	30.67%	69
Doctorate	2.67%	6
Other	1.78%	4
Total		225

Most of the respondents had many years of work experience, with 26+ years (54%) and 21 to 25 years (21%), 16 to 20 years (8%), 11 to 15 years (7%), 6 to 10 years, (6%) and 0 to 5 years (4%).

Table 6

Years of Work Experience

Years of Work Experience		
0-5	4.05%	9
5-10	6.31%	14
11-15	7.21%	16
16-20	8.11%	18
21-25	20.72%	48
26+	53.60%	119
Total		222

Many of the respondents had 5 years or less (38%), with 6 to 10 years, (19%), 11 to 15 years (12%), 16 to 20 years (12%), 21 to 25 years (7%) and more than 25 years (12%).

Table 7

Tenure with the Organization

Tenure with the organization		
0-5	38.12%	85
5-10	18.83%	42
11-15	12.11%	27
16-20	12.11%	27
21-25	7.17%	16
26+	11.66%	26
Total		223

Functionally the breakdown is Information Technology (24%), Sales/Service (21%), R&D/Innovation (14%) and Operations/Manufacturing (14%) represent almost three quarters of the respondents. Finance/Accounting (2%), Human Resources (1%), General Business Services (4%), Marketing (4%) and Other (16%) account for the reminder.

Table 8

Function/Department

Function/Department		
Finance/Accounting	2.22%	5
Information Technology	23.56%	53
Human Resources	1.33%	3
Sales/Service	21.33%	48
R&D/Innovation	13.78%	31
Operations	10.67%	24
Manufacturing	3.56%	8
General Business Services	3.56%	8
Marketing	4.44%	10
Other	15.56%	35
Total		225

Home based respondents were the largest group at 30%, Other North America at 19%, Outside North America at 16%, Bothell Campus at 10% and Cambridge at 9%, collectively accounting for the bulk of the respondents.

Table 9

Location

Location		
Cambridge	9.33%	21
Bothell campus	10.22%	23
Murrysville Campus + COE	5.78%	13
Alpharetta	3.11%	7
Field	4.89%	11
Home Based	29.78%	67
Canada	2.22%	5
Other North America	19.11%	43
Outside North America	15.56%	35
Total		225

Data Analysis

The data were exported from Survey Monkey in Excel format, and were reviewed in Excel, and then exported from Excel in CSV format and imported into SmartPLS, version 3.0 for analysis. SmartPLS is a partial least squares structural equation modeling tool that was deemed appropriate for this study (Hair et al., 2019; Wong, 2019).

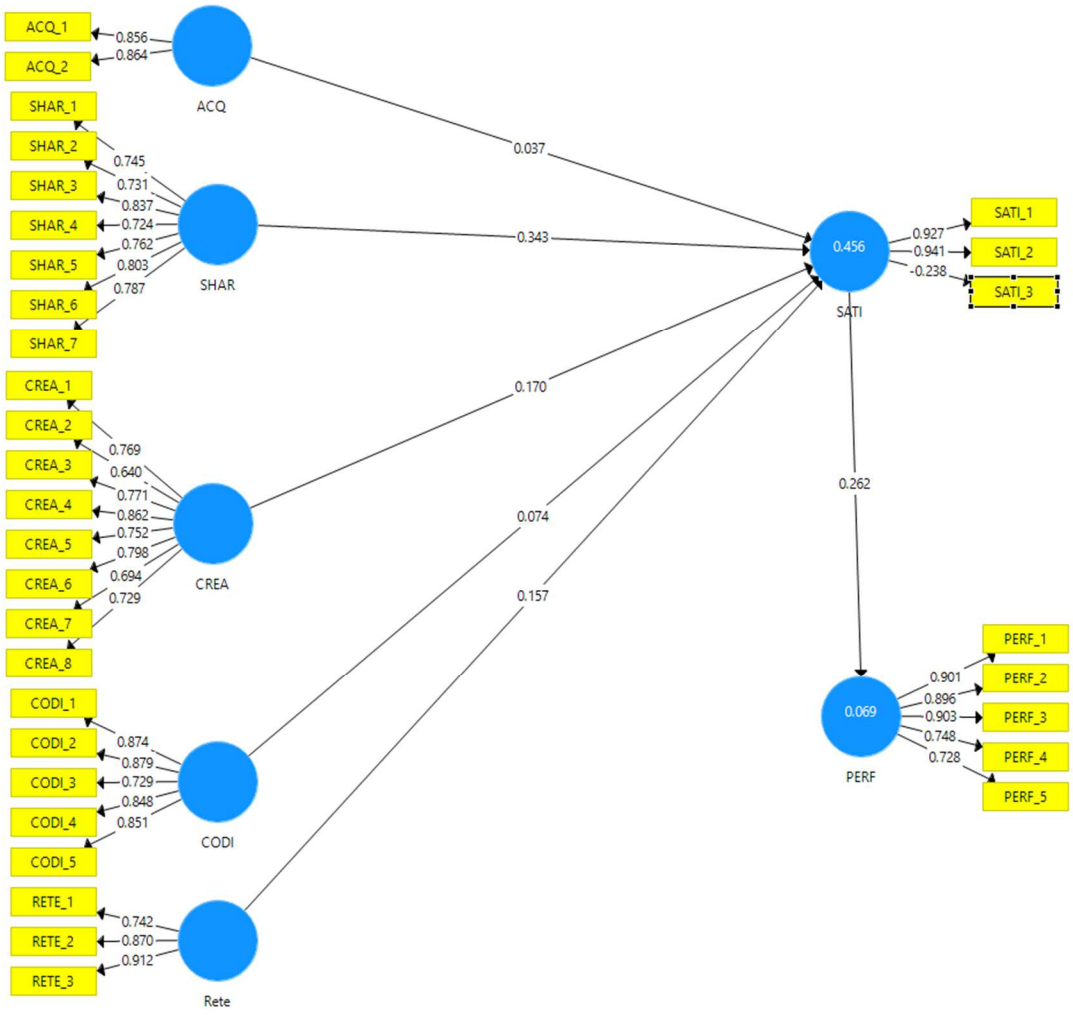
Utilizing SMART PLS 3.0 testing was done for model fit, factor loading, construct reliability and validity, discriminant validity, path coefficients and bootstrapping. Bootstrapping is a statistical procedure that resamples the single dataset many times (in this case 10,000 times), to create many simulated samples. The bootstrap result approximates the normality of data. Using this process then allows the researcher to

perform hypotheses testing for a number of different types of sample statistics (Hair et al., 2022; Wong, 2019).

As illustrated in Figures 2 and 3 below, two models were utilized, with Model 1 (Figure 2) focused on job satisfaction and Model 2 (Figure 3) focused on job performance. An assessment of a model is achieved by examining the indicator loadings, above 0.708 are typically recommended since they explain more than 50% of an indicator's variance and are acceptable in terms of reliability (Hair et al, 2019).

Figure 2

Model 1 Satisfaction Loadings – Initial



The bulk of the loadings were seen above or reasonably close to the 0.708 range except one loading was noted, SATI_3 showed a loading of -0.238. SmartPLS was used to calculate the construct's reliability looking at a variety of measures including Cronbach's alpha, Rho A, Composite Reliability and Average Variance Extracted (AVE).

Table 10

Model 1 Satisfaction Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Rel	Average Var
ACQ	0.647	**0.648**	0.85	0.739
CODI	0.893	0.905	0.922	0.702
CREA	0.89	0.897	0.913	0.569
PERF	0.892	0.89	0.922	0.704
Rete	0.799	0.85	0.881	0.713
SATI	**0.349**	0.867	**0.689**	0.6
SHAR	0.886	0.89	0.911	0.594

The review of the Construct Reliability table indicates that there is an issue as seen in Cronbach's Alpha with Satisfaction (SATI) showing a score of only 0.349 which in also reflected in the previous loading score of -0.238 for SATI_3 and in the Composite Reliability. After the assessment of Model 1 loading and construct reliability and validity a decision was made to remove SATI_3 from the analysis. This is recommended as a procedure to improve the model (Hair et al., 2022).

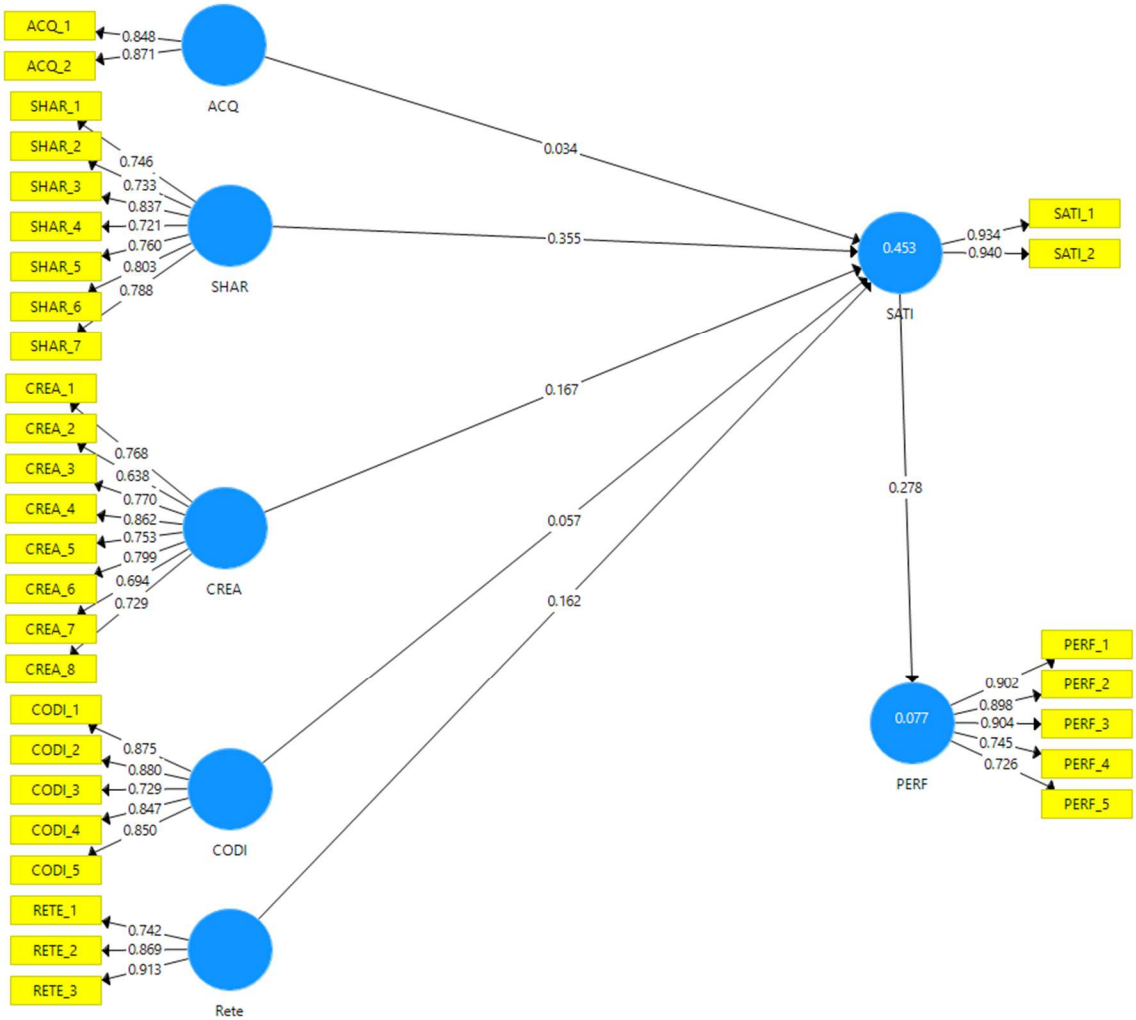
Model 1 was modified by removing SATI_3 since it was showing a loading score of a -0.238. Model 1 was rerun and the construct reliability and validity improved as seen on Table 11 below with Cronbach's Alpha score for SATI improving from the prior value of 0.349 to a new value of 0.861. Composite reliability also changed from 0.689 to new value of 0.935. The loadings are now all generally around or above .708 as indicated in Figure 3 on the next page.

Table 11

Model 1 Satisfaction (Revised) Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Rel	Average Var
ACQ	0.647	0.65	0.85	0.739
CODI	0.893	0.906	0.921	0.702
CREA	0.89	0.897	0.913	0.569
PERF	0.892	0.891	0.922	0.704
Rete	0.799	0.852	0.881	0.713
SATI	0.861	0.864	0.935	0.878
SHAR	0.886	0.89	0.911	0.594

Figure 3 *Model 1 Satisfaction Loadings – Revised*



A third step of assessing the model addresses the convergent validity of each construct measure. This is done to determine the extent to which a construct converges to explain the variance of its items and the metric typically used is the average variance extracted (AVE) for each indicator of the construct. An AVE of 0.50 or higher indicates that the construct explains at least 50% of the variance (Hair et al., 2019). In Table 11, (previous page) the table indicates that all are above the 0.50 threshold.

The next step needed is to assess discriminant validity, which indicates the extent to which a construct is distinct from other constructs empirically in the structural model. This was evaluated using the Fornell-Larcker method. To be valid the diagonal value must exceed the values in the rows and columns (Hair et. al., 2019). As seen in Table 12, the model is within acceptable limits.

Table 12

Model 1 - Discriminant Validity (Fornell-Larcker)

	ACQ	CODI	CREA	PERF	Rete	SATI	SHAR
ACQ	0.86						
CODI	0.308	0.838					
CREA	0.378	0.677	0.754				
PERF	0.08	0.235	0.194	0.839			
RETE	0.236	0.648	0.68	0.239	0.844		
SATI	0.265	0.53	0.581	0.277	0.566	0.937	
SHAR	0.319	0.689	0.712	0.262	0.691	0.636	0.771

As another check on discriminant validity, the Hetrotrait-Monotrait ratio of correlations was utilized, with values of less than .90 being acceptable. A value that exceeds .90 for a structural model would indicate that the constructs are very similar (Hair et. al., 2019). As can be seen in Table 13, the values are all less than .90.

Table 13

Model 1 - Discriminant Validity (Hetrotrait-Monotrait)

	ACQ	CODI	CREA	PERF	Rete	SATI	SHAR
ACQ							
CODI	0.411						
CREA	0.502	0.748					
PERF	0.107	0.267	0.217				
RETE	0.335	0.769	0.808	0.272			
SATI	0.357	0.596	0.659	0.316	0.663		
SHAR	0.426	0.777	0.799	0.296	0.807	0.721	

The results of the Fornell-Larcker test and the Hetrotrait-Monotrait test indicate that discriminant validity was achieved by the model.

The next test was to utilize the variance inflation factor (VIF) to assess the collinearity of the formative indicators. VIF values about 5 or above typically indicate issues (Hair et. al., 2019). Table 14 below indicates the results of the test, all below 5.

Table 14

Model 1 – Variance Inflation Factor (VIF)

	ACQ	CODI	CREA	PERF	Rete	SATI	SHAR
ACQ						1.184	
CODI						2.323	
CREA						2.667	
PERF							
RETE						2.35	
SATI				1			
SHAR						2.677	

Another item needed is to be examined was model fit. Model 1 was checked for standard fit using standardized root mean square residual (SRMR). SRMR is defined as the root mean square discrepancy between the observed correlations and the model implied correlations where a value of zero would indicate a perfect fit. For SRMR, a value below 0.080 would typically signify a good fit (Hair et al., 2017). Table 15 shows the results for SRMR. The SRMR for the model fit is less than 0.080 and hence an acceptable fit.

Table 15

Model 1 - Model Fit

	Saturated Model	Estimated Model
SRMR	0.067	0.071

The next step was to examine the path coefficients for the model. Bootstrapping for Model 1 Satisfaction was done with a 10,000 resampling, with a two-tail test, and a significance level of 0.05 to assess the significance of Model 1 paths. The path coefficients were calculated. The results are shown in Table 16.

Table 16

Model 1 - Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.033	0.034	0.057	0.581	0.561
CODI -> SATI	0.058	0.056	0.079	0.736	0.462
CREA -> SATI	0.167	0.17	0.094	1.772	0.076
RETE -> SATI	0.163	0.163	0.08	2.028	0.043
SATI -> PERF	0.277	0.285	0.067	4.159	0.000
SHAR -> SATI	0.354	0.355	0.093	3.803	0.000

The original sample shows the results of the overall sample and indicates the results given by the algorithm from PLS. The sample mean are the results of the resamples used during the boot strapping process. It is established that a *t* statistic with a value of more than 1.96 is significant (Hair et. al., 2022; Wong, 2019). A *p* value of <.05 would be significant. A *p* value of 0.000 simply indicates that the actual value is less than 0.001 but Smart PLS reports it as 0.000 (Wong, 2019). Table 16 indicates that knowledge retention has a positive impact upon job satisfaction, and knowledge sharing as well since both show a *t* statistic value exceeding 1.96. Knowledge worker job satisfaction has a positive impact upon job performance also shows with a *t* statistic exceeding 1.96.

Knowledge sharing was seen in a number of prior studies as a key knowledge management process which promoted job satisfaction (Kianto et al., 2016; Pruzinsky &

Mihalcov, 2017). Additional studies which focused on job satisfaction found knowledge sharing had a strong impact upon job satisfaction (Alias et al. 2018; Henttonen et al. 2016). So this study reinforces the prior findings of the impact of knowledge management sharing on job satisfaction.

Knowledge retention is another key process that has been seen as having an impact on job satisfaction in prior studies (Kianto et al., 2016; Pruzinsky & Mihalcov, 2017). In more recent studies of knowledge management processes, knowledge retention was also found to have a positive impact on job satisfaction (Alias et al. 2018; Jin et al., 2020; Sahibzada et al; 2020). This study also reinforces the prior findings that job satisfaction is impacted by the knowledge management process of retention.

A number of prior studies of knowledge management processes have found that knowledge codification has a positive impact on job satisfaction (Jin et al., 2020; Kianto et al., 2016; Masa'deh, 2016; Pruzinsky & Mihalcov, 2017) However in this study, at the organizational level knowledge management codification does not have an impact on job satisfaction.

Many of the studies of knowledge management and job satisfaction make assumptions that job satisfaction leads to better job performance but they did not test or directly measure this assumption. Researchers have relied on other studies that show, in general, job satisfaction ultimately leads to higher job performance citing other research (Judge et al., 2001; Springer, 2001; Shaikh et al., 2012). This short coming has been cited as an area of future research by other studies or highlighted as an assumption made by researchers of knowledge management (Alias et al., 2018; Arif et al., 2018; Kianto et al., 2016; Masa'deh et al., 2019; Pruzinsky & Mihalcov, 2017; Purba et al., 2020). In this

study, the research shows that knowledge management job satisfaction has a positive impact upon job performance.

This study has a total of 15 hypotheses; this section has addressed six of the fifteen as the following outcome of this portion of the study shown in Table 17.

Table 17

Hypotheses and Outcomes H1-5, H11

Hypotheses	Supported
H1 - Knowledge acquisition will positively impact worker job satisfaction.	No
H2 - Knowledge sharing will positively impact worker job satisfaction.	Yes
H3 - Knowledge creation will positively impact worker job satisfaction.	No
H4 - Knowledge codification will positively impact worker job satisfaction.	No
H5 - Knowledge retention will positively impact worker job satisfaction.	Yes
H11 - Job satisfaction will positively impact worker job performance.	Yes
The remaining hypotheses are examined later as a result of additional testing.	

In this study of the organization the processes of knowledge sharing and knowledge retention both showed a positive impact on job satisfaction. Also job satisfaction positively impacts worker job performance.

As the next step in analysis, using bootstrapping for Model 1 Satisfaction was done with a 10,000 resampling, with a two-tail test, and a significance level of 0.05 to assess the significance of Model 1 total effects. Total Effects is equivalent to the direct plus indirect effects of constructs through mediation. The results are shown below in Table 18.

Table 18

Model 1 – Total effects

	Original Sample Mean	Sample Mean	Standard Dev	*t* Statistic	*p* Value
ACQ -> PERF	0.009	0.01	0.017	0.545	0.585
ACQ -> SATI	0.033	0.034	0.057	0.581	0.561
CODI -> PERF	0.016	0.016	0.024	0.677	0.498
CODI -> SATI	0.058	0.056	0.079	0.736	0.462
CREA -> PERF	0.046	0.047	0.028	1.661	0.097
CREA -> SATI	0.167	0.17	0.094	1.772	0.076
RETE -> PERF	0.045	0.047	0.027	1.683	0.092
RETE -> SATI	0.163	0.163	0.08	2.028	0.043
SATI -> PERF	0.277	0.285	0.067	4.159	0
SHAR -> PERF	0.098	0.102	0.039	2.527	0.012
SHAR -> SATI	0.354	0.355	0.093	3.803	0

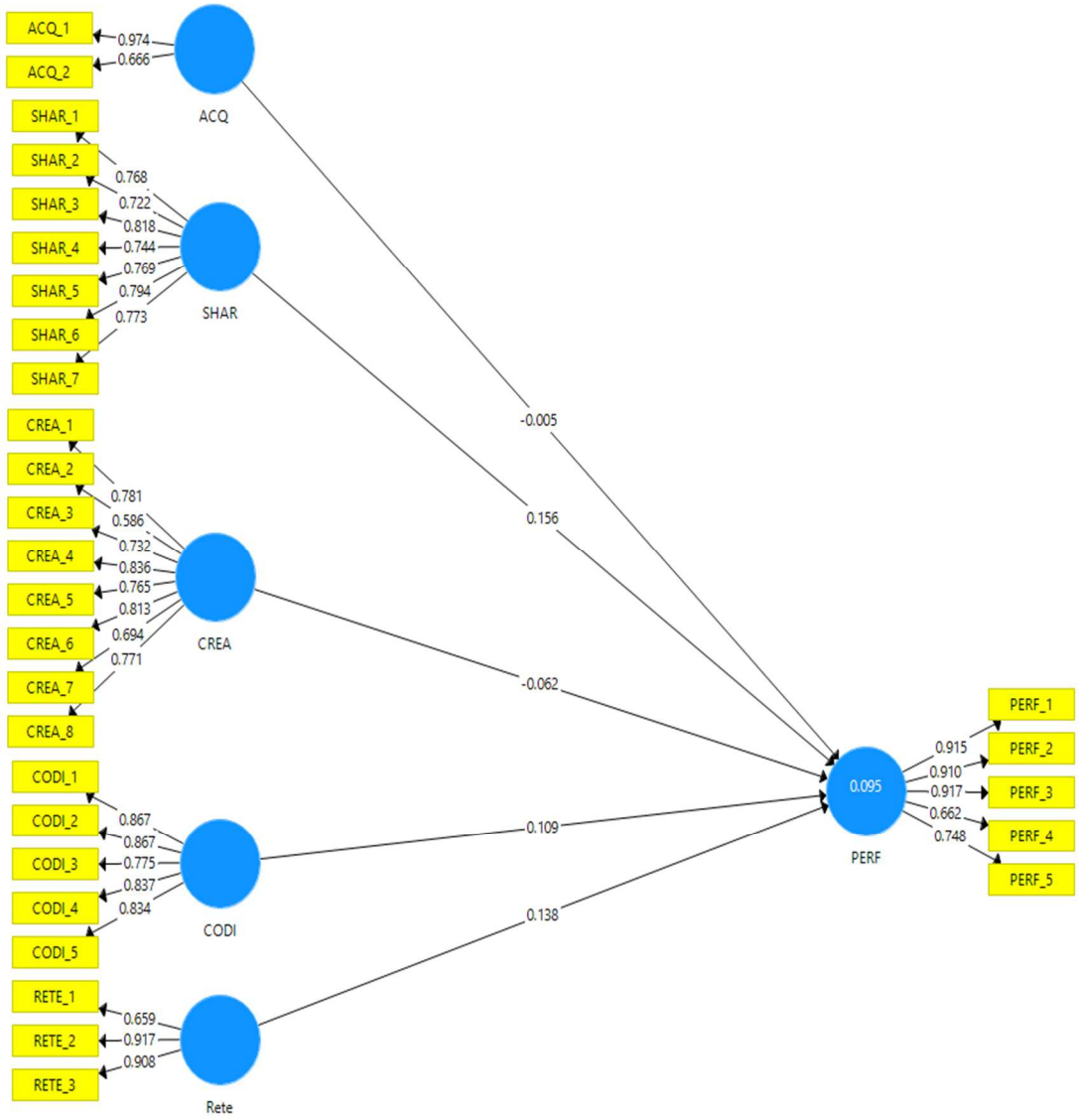
The total effects also show that knowledge sharing and knowledge retention have positive impact on job satisfaction and knowledge sharing also has a positive impact on performance. Also to be noted is the impact of job satisfaction on job performance when total effects are measured.

SMART PLS 3.0 testing was done for model fit, factor loading, construct reliability and validity, discriminant validity, path coefficients and bootstrapping for Model 2, which is focused on job performance and hypotheses, H6-H10, and H13.

An assessment by examining the indicator loadings for Model 2 (Performance) was done. Loadings above 0.708 are typically recommended (Hair et al, 2019). Model 2 was then analyzed and indicates loadings are generally around or above .708 and hence this is a reasonable model. This is shown in Figure 4.

Figure 4

Model 2 (Performance) - Loadings



Next checks were done for construct reliability and validity, discriminant validity, Variance Inflation Factor (VIF) and model fit.

Table 19

Model 2 (Performance) - Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance
ACQ	0.647	1.32	0.817	0.697
CODI	0.893	0.902	0.921	0.7
CREA	0.89	0.913	0.911	0.564
PERF	0.892	0.915	0.921	0.702
RETE	0.799	0.909	0.873	0.7
SHAR	0.886	0.89	0.911	0.593

The check on the construct reliability and validity in Table 19 is reasonable given the scores of Cronbach's Alpha and Composite reliability. The next step of assessing Model 2 addresses the convergent validity of each construct measure. An AVE of 0.50 or higher indicates that the construct explains at least 50% of the variance (Hair et al., 2019). Table 19 indicates that all are above the 0.50 threshold.

Next was an assessment of discriminant validity of Model 2. This was evaluated using the Fornell-Larcker method. To be valid the diagonal value must exceed the values in the rows and columns (Hair et. al., 2019).

Table 20

Model 2 - Discriminant Validity (Fornell-Larcker)

	ACQ	CODI	CREA	PERF	RETE	SHAR
ACQ	0.835					
CODI	0.358	0.837				
CREA	0.326	0.675	0.751			
PERF	0.094	0.258	0.216	0.838		
RETE	0.215	0.635	0.679	0.27	0.837	
SHAR	0.318	0.694	0.722	0.279	0.688	0.77

As another check on discriminant validity, the Hetrotrait-Monotrait ratio of correlations was utilized, with values of less than .90 being acceptable. A value that exceeds .90 for a structural model would indicate that the constructs are very similar (Hair et. al., 2019). The two methods indicate that discriminant validity was achieved as seen in Tables 20 and 21.

Table 21

Model 2 - Discriminant Validity (Hetrotrait-Monotrait)

	ACQ	CODI	CREA	PERF	RETE	SHAR
ACQ						
CODI	0.411					
CREA	0.502	0.748				
PERF	0.107	0.267	0.217			
RETE	0.335	0.769	0.808	0.272		
SHAR	0.426	0.777	0.799	0.296	0.807	

Next was a check of the variance inflation factor (VIF) which is used to assess the collinearity of the formative indicators. VIF values about 5 typically indicate issues (Hair et. al., 2019). In this instance the values are under 5 as seen in Table 22 so this is acceptable check.

Table 22

Model 2 – Variance Inflation Factor (VIF)

	ACQ	CODI	CREA	PERF	RETE	SHAR
ACQ				1.179		
CODI				2.364		
CREA				2.62		
PERF						
RETE				2.302		
SHAR				2.758		

The next item to check was Model 2 for model fit. This was done by using standardized root mean square residual (SRMR) to check the fit. An acceptable fit is values under 0.080 (Hair et al., 2017). As seen in Table 16, SRMR was 0.069 and below the 0.080 value which signifies a good fit.

Table 23

Model 2- Model Fit

	Saturated Model	Estimated Model
SRMR	0.069	0.069

Model 2 (Performance) bootstrapping was done with a 10,000 resampling, with a two-tail test, and a significance level of 0.05 to assess the significance of model 1 paths. The path coefficients and the total effects were calculated.

Table 24

Model 2 – Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> PERF	-0.004	0.009	0.083	0.045	0.964
CODI -> PERF	0.103	0.087	0.11	0.936	0.349
CREA -> PERF	-0.057	-0.021	0.097	0.584	0.56
RETE -> PERF	0.136	0.133	0.1	1.355	0.176
SHAR -> PERF	0.156	0.154	0.121	1.292	0.197

In Table 24, we can see that the five knowledge management processes were considered and that each of the five individual processes do not show a positive impact directly on job performance, although sharing and retention are slightly higher they are not above the threshold of significance. Therefore the five knowledge management processes individually do not directly impact job performance.

Table 25

Model 2 – Total Effects

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> PERF	-0.004	0.009	0.084	0.044	0.965
CODI -> PERF	0.103	0.087	0.11	0.930	0.352
CREA -> PERF	-0.057	-0.019	0.098	0.577	0.564
RETE -> PERF	0.136	0.131	0.101	1.347	0.178
SHAR -> PERF	0.156	0.153	0.119	1.313	0.189

The total effects show that knowledge management processes have no impact on job performance.

Hence the following hypotheses are not supported as seen in Table 26 below.

Table 26

Hypotheses and Outcomes H6-10

Hypotheses	**Supported**
H6 - Knowledge acquisition will positively impact worker job performance.	No
H7 - Knowledge sharing will positively impact worker job performance.	No
H8 - Knowledge creation will positively impact worker job performance.	No
H9 - Knowledge codification will positively impact worker job performance.	No
H10 -Knowledge retention will positively impact worker job performance.	No
The remaining hypotheses are examined later as a result of additional testing.	

Next the study examined knowledge management processes and job satisfaction related hypotheses based upon job level, location, and function. SMART PLS 3.0 testing was done based on Model 1, shown in Figure 3. Bootstrapping was utilized on subsets of the data to examine satisfaction related hypothesizes H12 (job level), H14 (location), and

H15 (function). The study also examined hypothesis H13 (job performance), utilizing Model 2, this testing utilized Model 2 in Figure 4. The demographic data from the survey was used for hypothesizes H12-H15.

Analysis on Job Level (H12 - Satisfaction)

Upon review of the data it was determined that the sample size of 4 for the job level of Supervisor was too low to be meaningful since the sample was only 4 of 225, hence the focus on the other four levels**.**

Senior Management (Job level 1) shows none of the processes based, upon the *t* statistics have an impact on job satisfaction, nor does job satisfaction have an impact on performance as seen in Table 27.

Table 27

Job Level 1 Senior Management Satisfaction Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistics	*p* Values
ACQ -> SATI	0.026	-0.082	0.482	0.053	0.958
CODI -> SATI	-0.28	-0.172	1.177	0.238	0.812
CREA -> SATI	0.577	0.483	1.651	0.349	0.727
RETE -> SATI	0.345	0.303	0.445	0.775	0.439
SATI -> Perf	0.291	0.223	0.427	0.682	0.495
SHAR -> SATI	0.238	0.318	0.464	0.514	0.607

Management (Job Level 2) shows creation and sharing have an impact on job satisfaction based upon *t* statistics exceeded 1.96. Additionally job satisfaction shows an impact upon job performance for managers as seen in Table 28.

.**Table 28**

Job Level 2 Management Satisfaction Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	-0.12	-0.093	0.125	0.96	0.337
CODI -> SATI	0.065	0.048	0.169	0.384	0.701
CREA -> SATI	0.462	0.425	0.173	2.666	0.008
RERE -> SATI	-0.109	-0.055	0.18	0.606	0.545
SATI -> PREF	0.424	0.471	0.11	3.86	0
SHAR -> SATI	0.344	0.35	0.169	2.037	0.042

Experts (Job Level 4) show knowledge sharing has an impact on job satisfaction. Additionally job satisfaction shows an impact upon job performance for experts as seen in Table 29.

Table 29

Job Level 4 Experts Satisfaction Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.199	0.19	0.108	1.842	0.066
CODI -> SATI	0.145	0.13	0.115	1.261	0.208
CREA -> SATI	0.161	0.167	0.118	1.369	0.171
RETE -> SATI	0.1	0.114	0.132	0.76	0.447
SATI -> PERF	0.289	0.306	0.143	2.014	0.044
SHAR -> SATI	0.402	0.404	0.167	2.403	0.016

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In Table 30 employees (Job Level 5) show knowledge sharing has an impact on job satisfaction. Additionally job satisfaction shows an impact upon job performance for employees.

Table 30

Job Level 5 Employees Satisfaction Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.008	0.022	0.095	0.086	0.931
CODI -> SATI	0.138	0.14	0.164	0.839	0.401
CREA -> SATI	0.022	0.029	0.176	0.124	0.902
RERE -> SATI	0.202	0.196	0.139	1.452	0.147
SATI -> PERF	0.303	0.313	0.123	2.455	0.014
SHAR -> SATI	0.352	0.348	0.168	2.099	0.036

Therefore based on the analysis of job level and job satisfaction results vary based on job level as seen Table 31. H12 - The impact of knowledge management processes on job satisfaction will vary based upon employee job level so this hypothesis is affirmed.

Table 31

Hypotheses and Outcomes - Job Level and Job Satisfaction

Job Level - H12 Job Satisfaction				
Process	Sr. Management	Managers	Experts	Employees
ACQ > SATI	No	No	No	
CODI > SATI	No	No	No	
CREA > SATI	No	Yes	No	
RETE > SATI	No	No	No	
SATI > PERF	No	Yes	Yes	Yes
SHAR > SATI	No	Yes	Yes	Yes
Conclusion - H12 is proven, results vary by job level.				

Analysis on Job Level (H13 - Performance)

This analysis examined the hypotheses that the impact of knowledge management processes directly on job performance will vary based upon employee job level. This analysis used Model 2, Figure 4. There were five job levels from Senior Management, Manager, Supervisor, Expert and Employee collected as demographics. Upon review of the data it was determined that the sample size of 4 for the job level of Supervisor was too low to be meaningful hence the focus on the other four levels and job performance. Analysis was conducted on the four remaining job levels and the impact of the five knowledge management processes impact on job performance.

The results of the analysis for Senior Management (Job Level 1) are shown in Table 32. Senior Management shows none of the five processes have an impact on job performance.

Table 32

Job Level 1 Senior Management Performance Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> Perf	0.1	-0.16	0.493	0.203	0.839
CODI -> Perf	0.455	0.387	0.55	0.827	0.408
CREA -> Perf	0.145	0.135	0.595	0.243	0.808
RETE -> Perf	-0.375	-0.161	0.54	0.693	0.488
SHAR -> Perf	0.568	0.371	0.608	0.934	0.351

Table 33 shows the analysis of Management (Job Level 2) and the impact of the five processes upon performance. Management shows codification has an impact on job performance.

Table 33

Job Level 2 Management Performance Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> PREF	0.061	0.073	0.135	0.454	0.65
CODI -> PREF	0.482	0.414	0.244	1.981	0.048
CREA -> PREF	0.045	0.053	0.179	0.252	0.801
RERE -> PREF	0.031	0.071	0.213	0.144	0.885
Shar -> PREF	0.04	0.097	0.186	0.213	0.832

The results of the analysis of Experts (Job Level 4) in shown are Table 34. Experts show none of the processes have an impact on job performance

Table 34

Job Level 4 Experts Performance Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> PERF	0.073	0.038	0.178	0.411	0.681
CODI -> PERF	0.203	-0.059	0.243	0.833	0.405
CREA -> PERF	0.125	0.2	0.206	0.61	0.542
RETE -> PERF	-0.237	-0.111	0.27	0.876	0.381
SHAR -> PERF	-0.039	0.158	0.207	0.19	0.85

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Analysis for the impact of the processes and performance for Employees (Job Level 5) is shown on Table 35. Employees (Job Level 5) show none of the processes have an impact on job performance.

Table 35

Job Level 5 Employees (Sample 85) Performance Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> PERF	-0.198	-0.067	0.203	0.972	0.331
CODI -> PERF	-0.025	0.03	0.215	0.116	0.908
CREA -> PERF	0.042	-0.009	0.274	0.155	0.877
RERE -> PERF	0.238	0.203	0.161	1.482	0.139
SHAR -> PERF	0.09	0.128	0.221	0.409	0.683

Therefore analysis shows the impact of knowledge management processes on job performance does vary based upon employee job level. The hypothesis and outcome results are shown in Table 36 below.

Table 36

Hypotheses and Outcomes - Job Level and Job Performance

Job Level - H13 Job Performance				
Process	Sr. Management	Managers	Experts	Employees
ACQ > PERF	No	No	No	No
CODI > PERF	No	Yes	No	No
CREA > PERF	No	No	No	No
RETE > PERF	No	No	No	No
SHAR > PERF	No	No	No	No
Conclusion - H13 is supported, results do vary by job level.				

The results show that the impact of knowledge management processes on job performance does vary based upon employee job level which supports H13.

Analysis on Location (H14 - Satisfaction)

This analysis was done to determine the impact of knowledge management processes on job satisfaction based upon the location of the employee. This analysis examined the outputs based upon the location of the various participants in the study and differences by location. The model seen in Figure 3 was used.

For workers at home knowledge sharing has an impact upon worker job satisfaction and job satisfaction has an impact upon job performance as well as seen in Table 37.

Table 37

Analysis on Location – Home (H14 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	-0.012	0.001	0.13	0.096	0.923
CODI -> SATI	-0.129	-0.117	0.163	0.793	0.428
CREA -> SATI	0	0.013	0.181	0.002	0.998
RETE -> SATI	0.223	0.218	0.169	1.317	0.188
SATI -> PERF	0.319	0.344	0.11	2.895	0.004
SHAR -> SATI	0.496	0.495	0.157	3.157	0.002

For workers Other than Home or one of the specified locations knowledge sharing has an impact upon worker job satisfaction however job satisfaction had no impact on job performance.as shown in Table 38.

Table 38

Analysis on Location – Other (H14 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.11	0.115	0.091	1.209	0.227
CODI -> SATI	0.209	0.193	0.136	1.541	0.124
CREA -> SATI	-0.102	-0.054	0.147	0.696	0.487
RETE -> SATI	0.074	0.054	0.122	0.602	0.547
SATI -> PERF	0.131	0.103	0.227	0.578	0.564
SHAR -> SATI	0.557	0.563	0.13	4.282	0

In Table 39, for workers located in the Cambridge location knowledge sharing has an impact upon worker job satisfaction. Job satisfaction has an impact upon job performance as well.

Table 39

Analysis on Location – Cambridge (H14 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	-0.15	-0.15	0.395	0.379	0.704
CODI -> SATI	0.041	0.096	0.552	0.075	0.94
CREA -> SATI	0.324	0.354	0.387	0.838	0.402
RETE -> SATI	-0.18	-0.182	0.313	0.575	0.565
SATI -> PERF	0.522	0.535	0.246	2.125	0.034
SHAR -> SATI	0.689	0.619	0.336	2.048	0.041

As shown in Table 40, workers in the Bothell location knowledge acquisition, knowledge codification, and knowledge creation have an impact upon worker job satisfaction. Job satisfaction has an impact upon job performance as well.

Table 40

Analysis on Location – Bothell (H14 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.303	0.243	0.11	2.747	0.006
CODI -> SATI	0.302	0.324	0.117	2.572	0.01
CREA -> SATI	0.332	0.321	0.142	2.344	0.019
RETE -> SATI	0.033	-0.008	0.141	0.237	0.813
SATI -> PERF	0.48	0.534	0.166	2.896	0.004
SHAR -> SATI	0.242	0.29	0.175	1.381	0.168

Analysis shows for workers in the Murrysville Campus location none of the knowledge management processes have an impact upon worker job satisfaction as shown in Table 41.

Table 41

Analysis on Location – Murrysville Campus (H14 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.109	0.063	0.741	0.148	0.883
CODI -> SATI	-1.056	-0.731	1.27	0.832	0.406
CREA -> SATI	1.069	0.972	1.274	0.839	0.402
RETE -> SATI	0.388	0.345	0.902	0.43	0.667
SATI -> PERF	-0.459	-0.098	0.521	0.881	0.379
SHAR -> SATI	0.348	0.097	1.408	0.247	0.805

For participants outside of North America only knowledge management sharing has an impact on job satisfaction. Job satisfaction impact on job performance is close but does not reach the threshold of 1.96 as seen in Table 42.

Table 42

Analysis on Location – Outside North America (H14 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	-0.038	-0.043	0.11	0.35	0.727
CODI -> SATI	0.109	0.099	0.183	0.596	0.551
CREA -> SATI	0.259	0.254	0.197	1.316	0.188
RETE -> SATI	0.161	0.166	0.184	0.879	0.38
SATI -> PERF	0.393	0.418	0.203	1.941	0.053
SHAR -> SATI	0.421	0.441	0.134	3.145	0.002

The impact of knowledge management processes on job satisfaction, based on location has been analyzed. The hypothesis and outcome results are shown in Table 43. The impact of knowledge management processes on job satisfaction will vary based upon employee location supporting hypothesis 14.

Table 43

Hypotheses and Outcomes - Location and Job Satisfaction

Location - H14 Satisfaction						
Process	Home	Other	Cambridge	Bothell	Murrysville	Outside NA
ACQ -> SATI	No	No	No	Yes	No	No
CODI -> SATI	No	No	No	Yes	No	No
CREA -> SATI	No	No	No	Yes	No	No
RETE -> SATI	No	No	No	No	No	No
SATI -> PERF	Yes	No	Yes	Yes	No	No
SHAR -> SATI	Yes	Yes	Yes	No	No	Yes
Conclusion - H14 is supported, results vary by location						

Analysis on Function (H15 - Satisfaction)

This analysis examines the outputs based upon the function of the various participants in the study and the impact of knowledge management processes on job satisfaction. The Model 1seen in Figure 3 was used. This analysis examines the outputs based upon the job function of the various participants in the study and differences by function. The functioned examined include Sales/Service, Information Technology, Research and Development, Operations/Manufacturing, Finance/Human Resources/Marketing and General Business Services (Finance/HR/MKT/GBS), and Other.

For workers in the Sales/Service function none of the knowledge management processes have an impact upon worker job satisfaction. However knowledge management processes impact on job satisfaction positively impacts job performance, as seen in Table 44.

Table 44

Analysis on Function – Sales/Service (H15 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.12	0.108	0.149	0.807	0.42
CODI -> SATI	0.162	0.148	0.183	0.882	0.378
CREA -> SATI	0.036	0.037	0.229	0.156	0.876
RETE -> SATI	0.113	0.115	0.16	0.707	0.48
SATI -> PERF	0.433	0.443	0.13	3.326	0.001
SHAR -> SATI	0.403	0.419	0.217	1.859	0.063

For workers in Information Technology the knowledge management process of creation has an impact upon worker job satisfaction as seen in Table 45.

Table 45

Analysis on Function – Information Technology (H15 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.073	0.066	0.113	0.643	0.52
CODI -> SATI	0.162	0.172	0.145	1.115	0.265
CREA -> SATI	0.286	0.321	0.142	2.018	0.044
RETE -> SATI	0.083	0.065	0.151	0.548	0.584
SATI -> PERF	0.279	0.285	0.169	1.652	0.099
SHAR -> SATI	0.288	0.28	0.154	1.868	0.062

Table 46 shows for workers in Research & Development none of the knowledge management processes have an impact upon worker job satisfaction.

Table 46

Analysis on Function – Research & Development (H15 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.058	0.087	0.155	0.378	0.705
CODI -> SATI	0.09	0.137	0.287	0.313	0.754
CREA -> SATI	-0.076	0.005	0.248	0.307	0.759
RETE -> SATI	0.281	0.246	0.244	1.153	0.249
SATI -> PERF	0.32	0.299	0.273	1.174	0.241
SHAR -> SATI	0.518	0.422	0.357	1.45	0.147

For workers in Operations/Manufacturing the knowledge management process of knowledge sharing has an impact upon worker job satisfaction. Knowledge management job satisfaction positively impacts job performance as seen in Table 47.

Table 47

Analysis on Function – Operations/Manufacturing (H15 - Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	0.045	0.047	0.147	0.303	0.762
CODI -> SATI	-0.085	-0.055	0.231	0.368	0.713
CREA -> SATI	-0.079	0.007	0.252	0.312	0.755
RETE -> SATI	0.148	0.159	0.269	0.548	0.584
SATI -> PERF	0.402	0.453	0.129	3.116	0.002
SHAR -> SATI	0.75	0.655	0.299	2.506	0.012

Table 48 shows for workers in Finance/HR/MKT/GBS the knowledge management of retention have an impact upon worker job satisfaction.

Table 48

Analysis on Function – Finance/HR/MKT/GBS (H15 – Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SETI	-0.205	-0.195	0.195	1.048	0.295
CODI -> SETI	-0.49	-0.451	0.309	1.584	0.113
CREA -> SETI	0.154	0.125	0.283	0.543	0.587
RETE -> SETI	0.749	0.716	0.216	3.47	0.001
SETI -> PERF	0.391	0.287	0.367	1.067	0.286
SHAR -> SETI	0.558	0.597	0.307	1.819	0.069

As seen in Table 49, workers in other functions the knowledge management process of knowledge creation has an impact upon worker job satisfaction.

Table 49

Analysis on Function – Other (H15 – Satisfaction) Path Coefficients

	Original Sample Mean	Sample Mean	Standard Deviation	*t* Statistic	*p* Value
ACQ -> SATI	-0.242	-0.011	0.266	0.908	0.364
CODI -> SATI	0.09	0.007	0.221	0.409	0.683
CREA -> SATI	0.525	0.538	0.237	2.209	0.027
RETE -> SATI	-0.449	-0.296	0.278	1.614	0.107
SATI -> PERF	-0.226	-0.046	0.349	0.648	0.517
SHAR -> SATI	0.371	0.353	0.229	1.619	0.106

As seen in Table 50, the impact of knowledge management processes on job satisfaction will vary based upon the employee function. H15 is therefore supported.

Table 50

Function and Job Satisfaction H15

Function - H15 Satisfaction						
Process	Sales/ Service	IT	R&D	OPS/ Mfg	Fin/HR/MKT/ GBS	Other
ACQ -> SATI	No	No	No	No	No	No
CODI -> SATI	No	No	No	No	No	No
CREA -> SATI	No	Yes	No	No	No	Yes
RETE -> SATI	No	No	No	No	Yes	No
SATI -> PERF	Yes	No	No	Yes	No	No
SHAR -> SATI	No	No	No	Yes	No	No
Conclusion - H15 is supported, results vary by Function						

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Summary

This chapter presents the results of the analysis that was conducted on the data which was collected via an online survey utilizing Survey Monkey. The initial review of the data was done with the tools provided by Survey Monkey and Microsoft Excel. The structural analysis was conducted utilizing Smart PLS for the major data analysis. The research model was tested for factor loading, construct reliability and validity, discriminant validity, average variance extracted, variance inflation factor, model fit, and path coefficients. Initial loadings showed that one construct should be deleted and was deleted from the Model and the refined model was tested and was utilized for analysis using SmartPLS. There were fifteen hypotheses in this study and the results utilizing SmartPLS bootstrapping at the organizational level, six showed that knowledge management processes had an impact upon job satisfaction/performance. Additional analysis was also performed examining job level, location and functions which show difference within job level, locations and function. The conclusions, limitations, implications and recommendations for future studies are discussed in Chapter 5.

Chapter 5

Conclusions, Implications, Recommendations, and Summary

Introduction

This chapter includes conclusions, implications, and recommendations from the findings of the analytical results shown in Chapter 4, coupled with the literature reviewed. The conclusions for the research question of whether the knowledge management processes have a positive impact upon job satisfaction and job performance and if job satisfaction itself impacts job performance and the secondary goal of examining the results vary based upon demographic factors such as job classification, location or functional group are covered. This also includes a discussion of the study's limitations, strengths and weaknesses. This chapter also includes a discussion of the implications of the research and recommendations for future research opportunities.

Conclusions

The primary goal of this research was to assess whether the knowledge management processes have a positive impact upon job satisfaction and job performance and if job satisfaction itself impacts job performance. The goal was to understand the impact of five key knowledge management processes of knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification, and knowledge retention upon job satisfaction and job performance. The data were collected by an online anonymous survey instrument using Survey Monkey and the relationships were calculated and displayed by utilizing Smart PLS.

The five processes were assessed on an organizational basis. The results were that there was positive impact upon job satisfaction of two of the five knowledge management

processes; retention and sharing. At the organizational level knowledge acquisition, knowledge creation, and knowledge codification did not present a meaningful impact upon job satisfaction. However the study also showed that the collective impact of the five knowledge management processes did have an overall positive impact of worker job satisfaction and that in turn showed a positive impact upon collective job performance. A separate review of the five individual knowledge management processes of knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification, and knowledge retention individually did not show direct impact on job performance.

A secondary goal of the study was to examine if the results vary based upon demographic factors of job classification, location of respondent, or job function. In terms of job classification, as part of the demographics, respondents were asked to indicate their level; Senior Management, Management, Supervisor, Expert, or Employee. Only four respondents were classed as Supervisor and therefore that classification was dropped. The results of the analysis showed that the five knowledge management processes impact upon job satisfaction varied by job classification. For Senior Management, none of the processes exhibited an impact on job satisfaction, nor does job satisfaction have an impact on performance. Managers showed knowledge creation and knowledge sharing having a positive impact on job satisfaction; additionally job satisfaction shows an impact upon job performance for managers. For Experts, knowledge sharing has an impact on job satisfaction and job satisfaction shows an impact upon job performance. Employees showed knowledge sharing has an impact on job satisfaction, and job satisfaction, in turn shows an impact upon job performance for employees. So the results vary by job classification.

The study's results also show that the impact of the five knowledge management processes vary based upon the location of the respondent. For home based workers and for workers in Cambridge, knowledge sharing has an impact upon worker job satisfaction, and job satisfaction has an impact upon job performance. For workers in the Bothell location knowledge acquisition, knowledge codification, and knowledge creation have an impact upon worker job satisfaction. Job satisfaction has an impact upon job performance as well. For workers in the Murrysville Campus location none of the knowledge management processes have an impact upon worker job satisfaction or on job performance. For workers other than Home or one of the specified locations knowledge sharing has an impact upon worker job satisfaction however job satisfaction had no impact on job performance. The results therefore show that the results vary by the location of the respondents.

The study's results also show that the impact of the five knowledge management processes varied based on the respondents function. For workers in the Sales/Service and Research & Development (R&D) none of the knowledge management processes have an impact upon worker job satisfaction. For workers in Information Technology the knowledge management process of creation has an impact upon worker job satisfaction. For workers in Operations/Manufacture the knowledge management process of knowledge sharing has an impact upon worker job satisfaction. For workers in Finance/HR/MKT/GBS the knowledge management process of retention has an impact upon worker job satisfaction. For workers in other functions the knowledge management process of retention has an impact upon worker job satisfaction. In summery the impact

of knowledge management processes on job satisfaction will vary based upon the function of the employee.

Limitations

There are several limitations that exist in this study. The study was targeted at only a single organization, with multiple locations but with a primary focus on North America. Different organizations may exhibit different results and a focus upon North America, a different regional focus could yield different results. Sample size was limited to only 225 participants, which could have played a role in the results especially in the analyses of job classification, locations and functions; this might have resulted in not having the numbers and diversity in terms of all the demographical factors. Many of the respondents were 45 years or older and over 70% had more than 20 years' experience, so this might not be the norm.

Implications

This study provides some insights into the impact of knowledge management processes of knowledge acquisition, sharing, creation, codification and retention upon job satisfaction and job performance. As identified in the literature review, there was a lack of clear empirical evidence that demonstrates that knowledge management processes (sharing, retention, acquisition, codification, and creation) impact job satisfaction and in turn this satisfaction directly impacts job performance. This study demonstrates that knowledge management processes do impact job satisfaction, and that this job satisfaction leads to job performance as seen the study. However this study also indicates that job levels, location and function group all may impact the results in varying degrees.

The result of this study would support the concept that knowledge management processes have an impact on both job satisfaction and in turn on job performance.

Recommendations for Future Research

There are several different directions that this research could be extended. This study could be extended by increasing the sample size, and by enlarging the sample, might lead to stronger support for some of the hypotheses. More could be done with the demographics, to build upon the differences and why they exist. By understanding the demographic deeper we might gain additional understanding on why some of the results varied. More research is needed into the impact of the functions, although we now know it varies, more could be done on the role of location, and differences in job levels. Here Other demographics could be gathered and analyzed, for example, gender, educational level, years of experience, tenue and other factors.

Additional organizations in other industries or multiple industries could be studied, perhaps the results would be similar or different in yet ways not yet seen. Perhaps different industries would respond differently. Some knowledge management processes might be more important in some industries and not others. We know that differences in functions are seen, such as manufacturing which scored sharing important but other functions score retention high but we don't understand why. This all translate to an area with many future research opportunities. There are potentially many different possibilities in terms of future research into knowledge management processes and job satisfaction and the impact job performance. One intriguing possibility would be to examine across multiple organizations but only in a single function. Another possibility is to examine across multiple organizations in different industries.

Summary

This study focused upon the problem is that there is a lack of clear empirical evidence that demonstrates that knowledge management processes (sharing, retention, acquisition, codification, and creation) impact job satisfaction and in turn this satisfaction directly impacts job performance. This is an issue because we cannot plan with certainty knowledge management solutions and fund based upon the assumption that knowledge management will positively impact job satisfaction and performance. It is also unclear is if there are differences based upon not just job category but also the functional group that the knowledge worker resides. This could impact the ability to fund certain knowledge management initiatives especially if they are targeted towards a single function and could also impact the design of the knowledge management solution.

The goal of this dissertation was to assess whether the knowledge management processes have a positive impact upon job satisfaction and job performance and if job satisfaction itself impacts job performance. A secondary goal was to examine if the results vary based upon demographic factors such as job classification, location or functional group.

The key research questions were:

Q1 – To what extent do knowledge management processes (acquisition, sharing, creation, codification, and retention) have an impact upon knowledge worker job satisfaction?

Q2 – To what extent does knowledge management processes (acquisition, sharing, creation, codification, and retention) have an impact upon knowledge worker job performance?

Q3 – To what extent does job satisfaction of a knowledge worker have an impact upon job performance?

Q4 - Do the impacts differ based upon location?

Q5 – Do the impacts differ based on a knowledge worker's functional group?

Q6 – Do the impacts differ based upon job classification?

This study's data explained how five knowledge management processes impact worker job satisfaction and in turn job performance. It also addressed the role of different job classes, business function and location could provide results that varied from the organizational findings. The following hypotheses were tested:

H1 - Knowledge acquisition will positively impact worker job satisfaction.

H2 - Knowledge sharing will positively impact worker job satisfaction.

H3 - Knowledge creation will positively impact worker job satisfaction.

H4 - Knowledge codification will positively impact worker job satisfaction.

H5 - Knowledge retention will positively impact worker job satisfaction.

H6 - Knowledge acquisition will positively impact worker job performance.

H7 - Knowledge sharing will positively impact worker job performance.

H8 - Knowledge creation will positively impact worker job performance.

H9 - Knowledge codification will positively impact worker job performance.

H10 - Knowledge retention will positively impact worker job performance.

H11 - Job satisfaction will positively impact worker job performance.

H12 - The impact of knowledge management processes on job satisfaction will vary based upon employee job level.

H13 - The impact of knowledge management processes on job performance will vary based upon employee job level.

H14 - The impact of knowledge management processes on job satisfaction will vary based upon the location of the employee.

H15 - The impact of knowledge management processes on job satisfaction will vary based upon the function of the employee.

The fifteen hypotheses were tested using SmartPLS and analyzed. A total of 225 people responded to the survey instrument using Survey Money from the organization. The survey collected specific demographic data including gender, age, educational level, location, job class, business function, years of work experience, and tenure with the organization and respondents completed the survey regarding knowledge management processes and job satisfaction. From an organizational perspective, H1-11were analyzed and H1, H3, H4, H6 - H10, were not supported. H2, H5, H11 were supported by the analysis. H12, H14, H15 dealing with job class, location and function were supported, however H13 was not.

When viewed from an organizational perspective, knowledge sharing and knowledge retention positively impact worker job satisfaction, and job satisfaction positively impacts worker job performance. The five knowledge management processes do not directly impact job performance. The results of knowledge management processes vary based upon job class, location and function.

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Appendix A

IRB Exemption Letter

NOVA SOUTHEASTERN UNIVERSITY
Institutional Review Board

MEMORANDUM

To: George Reid Cooper
College of Engineering and Computing

From: Ling Wang, Ph.D.
College Representative, College of Engineering and Computing

Date: February 8, 2022

Subject: IRB Exempt Initial Approval Memo

TITLE: Impact of Knowledge Management Processes Upon Job Satisfaction and Job Performance– NSU IRB Protocol Number 2022-42

Dear Principal Investigator,

Your submission has been reviewed and Exempted by your IRB College Representative or their Alternate on **February 8, 2022**. You may proceed with your study.

Please Note: Exempt studies do not require approval stamped documents. If your study site requires stamped copies of consent forms, recruiting materials, etc., contact the IRB Office.

Level of Review: Exempt

Type of Approval: Initial Approval

Exempt Review Category: Exempt 2: Interviews, surveys, focus groups, observations of public behavior, and other similar methodologies

Post-Approval Monitoring: The IRB Office conducts post-approval review and monitoring of all studies involving human participants under the purview of the NSU IRB. The Post-Approval Monitor may randomly select any active study for a Not-for-Cause Evaluation.

Annual Status of Research Update: You are required to notify the IRB Office annually if your

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research study is still ongoing via the *Exempt Research Status Update xForm.*

Final Report: You are required to notify the IRB Office within 30 days of the conclusion of the research that the study has ended using the *Exempt Research Status Update xForm*.

Translated Documents: No

Please retain this document in your IRB correspondence file.

CC: Ling Wang, Ph.D.

Ling Wang, Ph.D.

Appendix B

Survey Instrument

		Score Agreement on the basis of 1 to 7 with 1 Lowest and 7 highest						
Concept	**Item**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Knowledge Acquisition	I easily find information needed in my work from sources outside my organization.							
	I get much important information from collaboration partners outside my organization.							
Knowledge Sharing	Communications with other members of my work group is efficient and beneficial.							
	My colleagues are open and honest with each other.							
	Our staff is interactive and exchange ideas widely across the organization.							
	I find it easy to communicate and co-operate with employees from other organizational units and functions.							
	There is mutual understanding between the various organizational units and functions.							
	Our staff shares information and learns from each other.							
	Different opinions are respected and listened to in the organization.							
Knowledge Creation	Information about the status, results and problems of different projects is easily available							
	Employees are encouraged to seek information actively outside the organization.							
	My organization constantly gathers information about the external operating environment							

Survey Instrument – continued (2)

Concept	Item	1	2	3	4	5	6	7
Knowledge Creation (continued)	Our organization actively collects development ideas							
	Our organization develops new methods for sharing knowledge (e.g. blogs, discussion forums) and encourages using them.							
	Middle management facilitates sharing knowledge between staff and top management							
	Customers often participate in our innovation processes (i.e., in developing a new product or service or other solution)							
	We have learning groups, where members can discuss their work experiences and problems.							
Knowledge Codification	I easily find the documents and files needed in my work.							
	Previously made solutions and documents are easily available.							
	Electronic communication (e.g., e-mail) is smooth in my work.							
	Our organization has efficient and appropriate information systems.							
	Information systems are exploited efficiently							
Knowledge Retention	When an experienced employee leaves, they are encouraged to transfer and distribute their knowledge to others.							
	Mentoring and coaching are used for familiarizing new employees to their tasks.							
	This organization encourages sharing information with colleagues.							

Survey Instrument – continued (3)

Concept	Item	1	2	3	4	5	6	7
Job Satisfaction	I enjoy my work very much							
	I can recommend my employer to others.							
	There is a lot of room for improvements in the general satisfaction of our work community.							
Job Performance	How good are you in your work compared to your colleagues?							
	How effective are you in your work compared to your colleagues?							
	How would you estimate the quality of your work compared to your colleagues?							
	How creative you are in your work compared to your colleagues?							
	How good is your collaboration ability when compared to your colleagues?							

Adapted from "Development and validation of a survey instrument for measuring organisational renewal capability" by A. Kianto, 2008, International Journal of Technology Management, 42(1-2), p. 69 and "Job satisfaction survey" by P.E. Spector, 1994 P. E. (1994). University of South Florida, Tampa, FL.

Appendix C

Participant Letter

NSU Florida
NOVA SOUTHEASTERN UNIVERSITY

INSTITUTIONAL REVIEW BOARD
3301 College Avenue
Fort Lauderdale, Florida 33314-7796
PHONE: (954) 262-5369

Participant Letter for
Anonymous Surveys NSU
Consent to be in a
Research Study Entitled
"Impact of Knowledge Management Processes upon Job Satisfaction and Job Performance"

Who is doing this research study?
This person doing this study is George Reid Cooper with College of Computing and Engineering. He will be helped by LingWang/Dissertation Chair

Why are you asking me to be in this research study?
You are being asked to take part in this research study because you are employee with xxx and utilize knowledge management

Why is this research being done?
The purpose of this study is to find out whether the knowledge management processes have a positive impact upon job satisfaction and job performance and if job satisfaction itself impacts job performance. A secondary goal is to examine if theresults vary based upon demographic factors such as job classification, gender, educational level or functional group.

What will I be doing if I agree to be in this research study?
You will be taking a one-time, anonymous survey. The survey will take approximately 10 minutes to complete.

Are there possible risks and discomforts to me?
This research study involves minimal risk to you. To the best of our knowledge, the things you will be doing have no more riskof harm than you would have in everyday life.

What happens if I do not want to be in this research study?
You can decide not to participate in this research and it will not be held against you. You can exit the survey at any time.

Will it cost me anything? Will I get paid for being in the study?
There is no cost for participation in this study. Participation is voluntary and no payment will be provided.

How will you keep my information private?
Your responses are anonymous. Information we learn about you in this research study will be handled in a confidential manner,within the limits of the law in the USA. This data will be available to the researcher, the Institutional Review Board and other representatives of this institution, and any granting agencies (if applicable). All confidential data will be kept securely on a singlecomputer/thumb drive. All data will be encrypted and kept for 48 months from the end of the study. At the conclusion of this time, the data will be rendered unrecoverable by utilizing professional tools.

Who can I talk to about the study?
If you have questions, you can contact George R Cooper at 781-856-5128 that will be readily available during daytime hours.The Dissertation Chair (Ling Wang) at NSU may also be contacted.

If you have questions about the study but want to talk to someone else who is not a part of the study, you can call the NovaSoutheastern University Institutional Review Board (IRB) at (954) 262-5369 or toll free at 1-866-499-0790 or email at IRB@nova.edu.

Do you understand and do you want to be in the study?

If you have read the above information and voluntarily wish to participate in this research study, please take part in the surveyand thank you!

THE SURVEY may be found here:

https://www.surveymonkey.com/r/H27SZ9Z