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Understanding Knowledge Creation in the Context of Knowledge-Intensive Business Processes

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UNDERSTANDING KNOWLEDGE CREATION IN THE CONTEXT OF KNOWLEDGE-INTENSIVE BUSINESS PROCESSES

A graduate project submitted to Dakota State University in partial fulfillment of the requirements for the degree of

Doctor of Science

in

Information Systems

By
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PROJECT APPROVAL FORM

We certify that we have read this project and that, in our opinion, it is satisfactory in scope and quality as a project for the degree of Doctor of Science in Information Systems.

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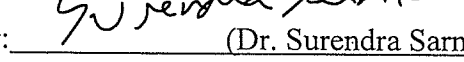
Committee member:  (Dr. Surendra Sarnikar) Date: May 10, 2013

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ABSTRACT

In today's knowledge economy, organizations are seeking to build upon their understanding of how knowledge management and business process managements systems can be aligned in order to support their knowledge-intensive business processes (KIBP). With knowledge serving as a key component for KIBP (which represents core processes for the organization), it is essential for organizations to understand how their knowledge management initiatives impact this category of processes. As part of knowledge management, the activities of knowledge creation lead to the development of new knowledge in the organization which is then used by the knowledge workers. Since knowledge serves as an essential part for KIBP, organizations need to understand their knowledge creation abilities and how knowledge creation occurs within the context of KIBP.

This study utilized a grounded theory approach across three organizations representing different industries in order to develop a theoretical framework defining the interactions between the main categories of organizational controls, technological resources, time, KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning. These categories become interconnected to make up the core category of KIBP social competencies which indicates how knowledge creation occurs in the context of KIBP. The findings of the study argue for the conceptualization of a social competency theory of knowledge creation in the context of KIBP and provide empirical evidence of key aspects of these components.

DECLARATION

I hereby certify that this project constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of another.

I declare that the project describes original work that has not previously been presented for the award of any other degree of any institution.

Signed,

Todd A. Little

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

BACKGROUND

Over the past few decades, organizations have been increasing their own ability to understand and handle the knowledge contained within their boundaries. As the trend to increase knowledge management (KM) initiatives continues to rise, organizations realize the importance of having their KM initiatives align with their other strategic initiatives such as business process management (BPM). Accordingly, organizations will be adapting their business processes to work more efficiently as changes in technology, information sources, tools, and abilities also change in the coming years (Gartner, 2012). It was predicted by Gartner, Inc. that organizations will need to augment their current BPM activities in order to make their current business processes more knowledge-adaptable based on maturing technologies and KM strategies and estimated nearly 40% (representing a 6% increase) of business managers and knowledge workers by 2014 will increase their reliance on complex business processes requiring organizational knowledge for completion (2010). Organizations are recognizing the importance of redesigning their processes to account for the increased reliance on knowledge but still need guidance on how the alignment between KM and BPM initiatives can occur within their environments.

Understanding the alignment between KM and BPM initiatives becomes even more essential when considering knowledge-intensive business processes (KIBP). Although organizations will utilize a variety of business processes, not all of these processes can be considered knowledge-intensive. Knowledge-intensive business processes (KIBP) represent core (and often complex) processes for the organization with knowledge serving an essential part in order to add value to the process (Gronau, Muller, & Korf, 2005). In fact, as the complexity of a process increases, knowledge-intensity levels also potentially increases (Marjanovic & Seethamraju, 2008). Examples of these types of processes can be seen with loan approval activities, investment inquiries, and also customer service areas; however, knowledge-intensive processes can be seen across all aspects of the organization. These

processes require an individual's judgment based on the experiences and knowledge of the individual obtained through a variety of sources such as knowledge repositories or experts (Marjanovic & Freeze, 2011; Schymik, Kulkarni, & Freeze, 2007). In addition, knowledge-intensive processes can be viewed as activities which cannot be fully predetermined since they often entail innovation on the part of the individual, involve further complex tasks, require extended time to learn the process accordingly, and are dependent on factors which influence the organizational environment (Bhat, Pooloth, Moorthy, Sindhgatta, & Thonse, 2007; Eppler, Seifried, & Ropnack, 1999). KIBP then requires the organization to be efficient in their ability to handle their knowledge in order to support the processes accordingly (Sarnikar & Deokar, 2009).

Organizations depend upon their ability to utilize knowledge management (KM) systems to handle their processes of creating, capturing, retrieving, and applying knowledge (Alavi & Leidner, 2001; S. Choi, Lee, & Yoo, 2010). Knowledge has been defined as a dynamic entity dependent on the context in which it serves the organization or individual and the nature of where, how, and when it is utilized (Nonaka, Toyama, & Konno, 2000) and is used to empower organizational activities and resolutions (Chan & Chao, 2008). Bharadwaj (2000) further indicated that insuring that individuals having information technology skills and appropriate technological hardware (and software) leads to a better means of achieving organizational objectives. KM technologies do provide support structures for organizations and also serve as a means of understanding KIBP within the organization. These technologies include but are not limited to artificial intelligence (AI), electronic discussion groups, databases, decision support systems (DSS), expert systems, and management information systems (Becerra-Fernandez, Gonzalez, & Sabherwal, 2004). This dynamic nature of knowledge dictates the need for organizations to also understand what conditions within the environment lead to the creation of knowledge. In the same manner, the implementation of knowledge-intensive processes will also be dependent on where, how, and when they are needed which again requires organizations to develop an understanding about which mechanisms are desirable to support these processes (Schymik, et al., 2007). Knowledge-intensive processes are therefore reliant on both KM and BPM strategies arguing the need for organizations to understand the requirements and conditions surrounding KIBP. Knowledge-intensive business processes have become an important facet for consideration among

researchers examining areas such as KM and process redesign (Dalmaris, Tsui, Hall, & Smith, 2007) and knowledge dimensions within business processes (Marjanovic & Seethamraju, 2008). However, Dalmaris et al. (2007) further noted previous studies focusing on KIBP have not sufficiently explained the creation and use of knowledge in the context of KIBP due to the lack of generalization and theory regarding KIBP itself across these studies. Therefore, additional research into how knowledge occurs and is used in the context of KIBP is recommended.

Organizations need to be able to identify which processes can be viewed as knowledge-intensive in order to develop methods in which to model, analyze, and optimize the processes (Gronau, et al., 2005; Kulkarni & Ipe, 2010). Through these steps, the organization can then work toward a better alignment of the KM and BPM strategic initiatives. However, given the reliance on knowledge within this type of business processes, the organization also needs to be aware of their mechanisms and conditions which support knowledge creation activities. KIBP represent core and complex processes in the organization and often change based on the organizational or individual objectives for the process. Therefore, understanding the requirements of those processes is essential for the organization (Gronau, et al., 2005). By clarifying their understanding of KIBP, organizations can then work toward enhancing their mechanisms and conditions within the environment which facilitate the KM initiatives required for the process (Kulkarni & Ipe, 2010). Further, knowledge creation activities can then be defined within the scope of the organization in order to leverage the knowledge required for KIBP.

The organization's ability to manage their KIBP centers upon the flow of knowledge across the organization (Alavi & Leidner, 2001). As seen in Figure 1, the use of information technologies within the organization leads toward the development and use of KM technologies impacting the management of KIBP. As KIBP are handled, information and knowledge can be provided back to the organization to influence the expectations of both IT and KM areas.

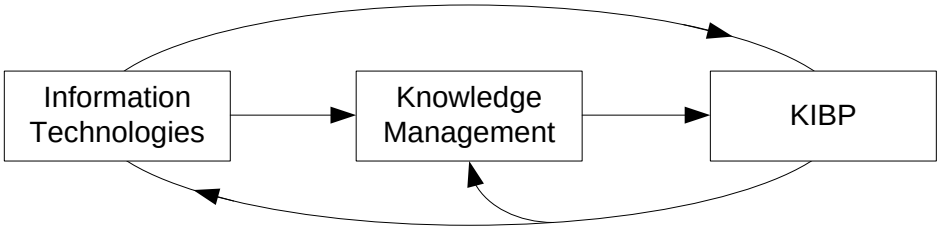

Figure 1. IT and KM impacting KIBP

Although different knowledge management processes have been identified, it is the process of knowledge creation which leads to the development of new knowledge in the organization to be used by the knowledge workers. It is process of knowledge creation which is the initial step in knowledge management activities and therefore has a substantial impact on the other initiatives (Wickramasinghe, 2006). Knowledge creation has been seen as a continuous process occurring through the interactions between individuals and their environment (Nonaka, et al., 2000). This concept of knowledge creation has been modeled by Nonaka and Takeuchi (1995) through the identification of socialization, externalization, combination, and internalization (SECI) activities and provides a perspective of how knowledge creation transpires across an organization. In essence, knowledge creation occurs when organizational data is manipulated to become information interpreted and used by individuals (Kalpic & Bernus, 2006).

Technologies can also be used to support organizational processes and facilitate knowledge creation activities by providing mechanism across the organization. Such mechanisms may include databases, Web-based knowledge repositories, and video-conferencing opportunities. Although many of these technologies best support the combination processes of knowledge creation, socialization methods (such as video-conferencing) can also provide opportunities for knowledge creation to occur. (Becerra-Fernandez, et al., 2004). With this as a definition of knowledge creation, knowledge creation can then be seen as an essential aspect within the context of KIBP. However, it should be further noted knowledge creation can be differentiated from knowledge utilization. Knowledge utilization indicates the opportunity to work with knowledge but does not necessarily indicate the knowledge is being learned or acquired by the individual (which is required within the definition of KIBP). Knowledge creation differs from knowledge utilization since knowledge creation supports the development of new knowledge (which can

take an extended time as defined by the characteristics of KIBP) for the individual (Becerra-Fernandez, et al., 2004; Polanyi, 1958). Through the knowledge-intensive process, the utilization of knowledge through other KM initiatives (such as knowledge transfer) can lead to knowledge creation across both short and long-term time frames depending on the objective of the process itself (Marjanovic & Seethamraju, 2008). However, knowledge creation can also occur prior to the KIBP being implemented if the knowledge to be used is created based on the result of a previous process or task completed. In the context of this study, knowledge creation can be examined as a result of a KIBP being initiated but the study also recognizes the knowledge creation activities can be seen prior to KIBP being conducted depending on the perspective of each process.

RESEARCH QUESTIONS

A survey of the extant literature indicates numerous studies in which KM or KIBP has been addressed; however, the limited number of studies aligning the two areas further indicates the need for further research in this area (Dalmaris, et al., 2007; Schymik, et al., 2007). Previous research studies (Kim, Hwang, & Suh, 2003; Nonaka, 1991; Papavassiliou, Mentzas, & Abecker, 2002) which indicated the impact of knowledge management initiatives on business performances have not efficiently addressed how these initiatives occur within KIBP (Freeze & Robles-Flores, 2005). Theoretical explanations as to why knowledge creation occurs within organizations have been offered through multiple studies (Alavi & Leidner, 2001; Brown & Duguid, 1991; Nonaka, von Krogh, & Voelpel, 2006; von Hippel, 1994) but fail to provide explanations as to how knowledge creation occurs with specific attention to knowledge-intensive processes and their particular characteristics (such as level of innovation of knowledge workers, environmental influences, short half-life of knowledge, and longer time to acquire skills for the processes). As organizational change occurs, new assumptions and guidance are required based on the new perspectives developed by individuals and organizations through changes in technologies and strategies (Isabella, 1990). These changes dictate the need for a continuation of developing organizational understanding of knowledge creation activities and their connection to business processes (Liao, 2003). Despite the generally accepted SECI model, further understanding of the mechanisms and conditions which impact the SECI activities is needed to present differing perspectives of organizational knowledge and its dynamic nature.

The research study was motivated by the need to present a perspective of knowledge creation in the context of KIBP. By providing further study, organizations can then begin to develop a better understanding of their own knowledge creation activities within their KIBP allowing them to develop or enhance these activities. To help address these gaps in the research, this study addressed the research question:

1. How does knowledge creation (as seen as a KM initiative) occur in the context of knowledge-intensive business processes?

Since knowledge-intensive business processes rely on knowledge, it is necessary to determine which conditions assist in the creation of knowledge for these processes with attention given to the characteristics of KIBP. Hence, the secondary question studied within this research:

2. What are the antecedents and mechanisms (such as technological resources) which lead to, influence, and support knowledge creation in the context of KIBP?

As a result of the study, a theoretical framework addressing the research questions was developed. Through this framework, key antecedents and conditions provide organizations a more prescriptive guide on how to understand their own knowledge creation activities within the context of KIBP. Since knowledge is embedded within KIBP, a better understanding of how knowledge creation occurs must be provided. Therefore, the theoretical framework developed through this study seeks to address the complexity of knowledge-intensive business processes by increasing the understanding of the knowledge creation activities within these processes. This study argues that knowledge creation in the context of KIBP occurs through the aggregate combination of individual characteristics (identified as KIBP social competencies), organizational controls, technological resources, and time. Given the connection between knowledge and individuals, it is essential that individual characteristics be explored in relation to knowledge creation activities. Thus, a theoretical framework focusing on this conceptualization is presented through a grounded theory approach.

DISSERTATION OUTLINE

The dissertation is outlined as follows: Chapter 2 provides a literature review on knowledge-intensive business processes, knowledge creation, organizational factors, and a perspective of previous extant research models; Chapter 3 introduces the grounded theory research methodology utilized for the study; Chapter 4 provides an examination of the analysis and interpretation of the findings identified; Chapter 5 presents the results of the

research by examining the axial and core categories identified to develop the theoretical model along with an evaluation of the theory; and Chapter 6 provides a discussion on the research questions, implications of the findings, contribution to the Information Systems discipline, and potential future research agendas.

CHAPTER 2

LITERATURE REVIEW

INTRODUCTION

The review of the literature has been developed through the scope of journals and books related to information systems, knowledge-intensive business processes, knowledge management, and knowledge creation. The intent of the review is to provide a foundation for the definition of the key concepts associated with knowledge-intensive business processes and knowledge creation. In addition, it assisted in establishing the scope of the research study. The chapter presents four main sections related to: (1) knowledge-intensive business processes, (2) knowledge creation, (3) organizational factors, and (4) perspective of previous research models. The approach to the literature review included the use of several resources such as the Business Source Premier and ABI-INFORM databases as well as the electronic library accessed through Association for Information Systems (AIS). General search terminology related to knowledge creation, KIBP, SECI, knowledge management, knowledge processes, process theory, and organizational change were utilized.

KNOWLEDGE-INTENSIVE BUSINESS PROCESSES

Organizations across various industries (such as healthcare, manufacturing, financial, educational, and government) can be described as having knowledge-intensive business processes and most will consider themselves to be knowledge-intensive given their use of knowledge to facilitate their tasks (Davenport & Grover, 2001). For example, healthcare organizations utilize processes categorized as KIBP in functional areas such as clinical (diagnosis), administrative (invoicing and billing), and financial segments (loan analysis). In addition, organizations which include new product development often utilize knowledge-intensive processes given the need to provide cross-functional interactions between individuals and teams (Ramesh & Tiwana, 1999). Characteristics of KIBP have been identified by their level of innovation (or creativity) of the knowledge worker, contingency on environmental influence, short half-life of knowledge within the processes, and longer time to learn and acquire skills for task completion (Eppler, et al., 1999; Marjanovic & Seethamraju,

2008). As such, organizations which utilize KIBP should align their knowledge management systems with these processes to provide the necessary support and knowledge required within the business process (Bhat, et al., 2007; Schymik, et al., 2007).

Knowledge is directly connected to individuals and therefore should be explored as an essential part of any business process (Marjanovic, 2010) which can be defined as a set of activities which lead toward the transformation or change of organizational inputs into desired outputs through the use of organizational resources (Freeze & Robles-Flores, 2005; Kalpic & Bernus, 2006). Although studies have addressed KIBP, further understanding of how existing knowledge can be embedded within KIBP to effectively impact organizational efforts is needed (Kalpic & Bernus, 2006). In addition, further study is required to continue identifying initiatives which lead to more effective and efficient knowledge creation activities within KIBP strategies across the organization (Freeze & Robles-Flores, 2005). Given the beneficial nature of knowledge within organizations, studies have identified the need for business process efforts to also include a focus on knowledge processes such as knowledge creation (Papavassiliou, et al., 2002). Consoli and Elche-Hortelano (2010) further argued the dynamics of business processes within organizations are dependent on the knowledge, individuals, and infrastructure. Although these processes may be perceived to be complex and recognized as presenting a challenge to clarify (Kalpic & Bernus, 2006), assistance can be obtained through the analysis of document-centered activities focusing on knowledge and information contained within files, regulations, and procedures (Papavassiliou, et al., 2002). Through the review of these sources of knowledge across the organization, knowledge processes can be seen as being integrated with business processes (Freeze & Robles-Flores, 2005). Within the organization, an analysis of current business processes can then lead toward the understanding and enhancement of knowledge-intensive tasks (Woitsch & Karagiannis, 2003).

KNOWLEDGE CREATION

As described previously, knowledge has been defined as a dynamic entity based on the context in which it serves the organization or individual (Nonaka, et al., 2000). Hussi (2004) argued it is this dynamic nature which provides the organization the means to continue its growth and the generation of new knowledge. Knowledge is equated to the information, skills, experience, and personal attributes of the individuals involved in the process (Kalpic & Bernus, 2006; Marjanovic, 2010; Woitsch & Karagiannis, 2003). Knowledge is created

through the organizational data which is manipulated through processes to become information interpreted and used by the individuals (Kalpic & Bernus, 2006). Nonaka et al. (1995) and Alavi and Leidner (2001) defined two forms of knowledge which can be maintained by organizations and individuals: explicit and tacit knowledge. First, explicit knowledge is knowledge stated in a formal and meaningful context in various forms which can be shared formally through established processes and methods (B. Choi & Lee, 2002; Nonaka, et al., 2000; Polanyi, 1958). It is the explicit knowledge which is codified or communicated in a written form. Second, tacit knowledge is knowledge which is not easy to formalize and is based on the subjective nature of individual personalities (B. Choi & Lee, 2002; Nonaka, et al., 2000; Polanyi, 1958). The SECI model proposed by Nonaka and Takeuchi (1995) centers upon the process of knowledge creation through the conversion and interaction between tacit and explicit knowledge.

Knowledge creation, as shown in Figure 2, was identified as a continuous process which occurs through interactions between individuals and their environment (Nonaka, et al., 2000). As argued by Nonaka and Toyama (2003), it is the interconnection between individuals and their environment which assists in the development of the dynamic nature of knowledge creation. The individuals and activities involved with knowledge creation coexist within the environment (Nonaka & Toyama, 2003) and therefore, the organizational factors and methods can be seen as having a significant impact on knowledge creation processes.

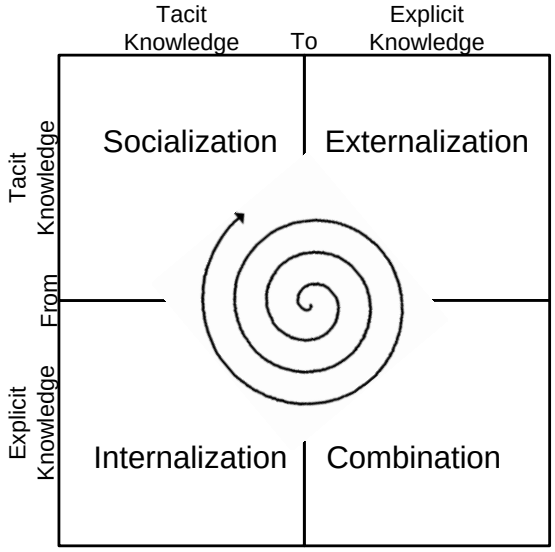

Figure 2. SECI model of knowledge creation

The SECI model proposed by Nonaka and Takeuchi (1995) emphasizes four modes of knowledge conversion between tacit and explicit forms of knowledge. Within the model, knowledge creation is viewed as a continual process spirally outwardly as knowledge creation builds upon itself. Knowledge created through the SECI spiral generates new opportunities for knowledge creation expanding beyond individual levels into the larger community (Hussi, 2004; Nonaka & Toyama, 2003; Nonaka, et al., 2000). The four modes include: (1) socialization, (2) externalization, (3) combination, and (4) internalization and can exist within both internal and external channels of the organization.

First, socialization involves the sharing of tacit knowledge with others in order to develop new tacit knowledge through the sharing of direct experiences and interactions between individuals (Nonaka & Toyama, 2003; Nonaka, et al., 2000). Socialization emphasizes the need for dialogue and communication among the individuals and/or groups within the organization (Hussi, 2004). Second, externalization is the conversion of tacit knowledge into explicit knowledge indicating the attempt to express the environment in an explicit manner (Nonaka & Toyama, 2003). With this conversion, tacit knowledge can then be shared across the organization in various forms. Third, the process of combination involves the use of explicit sources of knowledge to create new explicit knowledge. As internal or external explicit knowledge is utilized to create new explicit knowledge, it can assist in the operationalization of the organizational strategies (Nonaka & Toyama, 2003). Fourth, internalization demonstrates the conversion of explicit knowledge into tacit knowledge where knowledge created can then be applied to established processes or used to develop new processes across the organization (Nonaka & Toyama, 2003). Internalization can be demonstrated through training programs in which employees review manuals or other documents in order to build upon their own tacit knowledge (Hussi, 2004).

ORGANIZATIONAL FACTORS

As argued by Gold et al. (2001), the ability of the organization to integrate their knowledge creation processes across the entire organizational structure is required to enhance the capability of the organization to manage their knowledge management processes therefore requiring multiple segments within the organization to be involved in the handling of knowledge creation processes. Chen and Edgington (2005) further indicated the need for organizations to align their processes of knowledge creation with organizational strategies

supporting the argument to understand how organizational factors impact KIBP. Choi and Lee (2002) supported and recognized the factors impacting knowledge creation are generally associated with people, organization, and processes. Examples of these factors can be seen in Table 1.

Table 1. Knowledge creation factors

Factors	Authors
Knowledge creation and application; leveraging of existing knowledge	Nishimoto and Matsuda (2007); Pee, Kankanhalli, and Kim (2010); Antonova, Csepregi, and Marchev (2011); Gold, Malhotra, and Segars (2001); Chen, Mocker, Preston, and Teubner (2010)
Trusting relationships between groups; team-oriented environments	Nelson and Cooprider (1996)
Articulation of organizational vision and learning; supporting and encouraging cultural changes and behavior	Palanisamy (2007); Janz and Prasarnphanich (2003)
Establishing organizational norms and mechanisms	Bhatt and Grover (2005); Palanisamy (2007)
Distribution of knowledge	Chen, Mocker, Preston, and Teubner (2010); Chen, Liang, and Lin (2010)

In general, organizational culture, infrastructure, strategy, and purpose all have a role and influence knowledge management activities including knowledge creation (Kalpic & Bernus, 2006). However, as stated by Freeze and Robles-Flores (2005), it is difficult to identify one specific area or factor which influences KIBP. Therefore, knowledge creation activities can impact KIBP across the organization by providing more formal standards to task-correction, problem-solving routines, and defining sequence of steps within tasks (Consoli & Elche-Hortelano, 2010).

Organizational culture represents the underlying foundation of the organizational beliefs and values which are used to influence the organizational behavior either intentionally or unintentionally (Hussi, 2004). Further, organizational environments influence social

practices among its individuals. The organizational culture also dictates and supports the social structures which provide the means by which individuals can interact with others across the organization (Nonaka & Toyama, 2003). These social structures defined by the culture influence the knowledge sharing and application (Nishimoto & Matsuda, 2007; Pee, et al., 2010) as well as the building of trusting relationships between individuals, groups, and team-oriented environments (Nelson & Cooprider, 1996). Organizational leadership defines the role of organizational strategies and development of processes in order for the organization to build upon its competitive advantage and sustainability efforts (Nonaka & Toyama, 2003). Hussi (2004) argued the need for the organizational leadership to have the ability to perceive the changes in the organizational environment in order to make appropriate changes in practices and activities based on various conditions. This ability to make changes includes providing the opportunities for individuals to pursue ongoing dialogue and communications with each other, obtain knowledge through experienced and skilled workers, and share knowledge formally and informally (B. Choi & Lee, 2002). Hussi (2004) indicates organizational infrastructures (such as policies and procedures) can be defined as the structures within the organization which support the individuals and their environment. These structures can include multiple aspects of the organization including recruiting efforts, development efforts, technologies, and policies which can be used as resources or tools to support organizational growth (Hussi, 2004). Gold et al. (2001) argued the knowledge creation processes need to be established in order within the organizational policies and procedures to effectively maintain the KM tasks. In addition, the infrastructure of the organization can be established to support organizational mechanisms which are used to create and store knowledge (Bhatt & Grover, 2005; Palanisamy, 2007), knowledge mapping and application technologies (Dalmaris, et al., 2007; Vail III, 1999), and the distribution of knowledge across the organization (D. Chen, et al., 2010). It is the organizational infrastructure which provides the foundation from which organizations can develop, maintain, and disseminate knowledge as required.

As seen in Table 2, organizational factors can include a variety of aspects in addition to culture and leadership which provides additional areas where KIBP can be influenced. Depending on the organizational strategic initiatives, each of the various factors may be handled through different methods which might include both formal and informal activities.

Building an understanding of which methods and factors influence the organizational processes in the most efficient manner is an important aspect for both knowledge management and business process management initiatives.

Table 2. Organizational Factors

Factors	Conditions	Authors
Infrastructure	Shared technologies; network structures, databases	Markus (2001); Nevo and Wade (2010); Wade and Hulland (2004);
Employee Skills	Education, technical skills, training, decision-making ability	Harrison, Mykytyn, and Riemenschneider (1997); Kettinger and Grover (1995)
Organizational Resources	Structure, policies, rules, culture, collaboration opportunities	Harrison et al. (1997); Kettinger and Grover (1995); Leidner and Kayworth (2006); Roberts (2000)
Personal Attributes	Communication, education, willingness, perceptions	Kleijnen, Lievens, de Ruyter and Wetzels (2009); Nonaka et al. (2006)

PREVIOUS RESEARCH MODELS

Within the discipline, numerous studies have been conducted to illustrate the connections between knowledge creation processes and organizational factors. As argued by Smith, Collins, and Clark (2005), knowledge creation is influenced through the ability of the organization to provide social network opportunities for its employees in order to develop stronger relationships. By enhancing the commitment of its employees, organizations are able to provide an environment of stronger knowledge creation capabilities which align with its strategic goals. However, Smith et al. (2005) also recognized the need for organizations to adapt its methods due to the dynamic nature of knowledge creation. Schulz (2001) also supported and recognized the need for knowledge to flow both horizontally and vertically within the organization in order to achieve different goals. Whereas vertical-moving knowledge helps connects new knowledge with existing knowledge, horizontal-moving knowledge supports the knowledge sharing capabilities of the organization. By understanding the organizational factors related to knowledge creation processes, the organization can provide support for both vertical and horizontal structures as identified by Schulz (2001). Arikan (2009) asserted the organization's ability to enhance knowledge creation opportunities

leads to a more developed understanding of the factors impacting the processes. By realizing the factors which influence the knowledge creation processes, the organization can take steps to control or enhance the connections to these factors (Arikan, 2009). Further, by assessing the organization's current structures, the policies and routines associated with knowledge creation can be improved (Sun, 2008). By incorporating the routines developed for knowledge creation tasks into the organizational framework, Sun (2008) argues the organization will be able to expand its capabilities in knowledge creation and be in a better position to handle the dynamic nature of the knowledge-intensive processes. As suggested by Anand, Gardner, and Morris (2007), organizations need to understand and even clarify how their routines and procedures allow for the knowledge creation processes to become better incorporated into their current structures. In order to assess their current methods, organizations must also realize more thoroughly how knowledge creation is a construct made possible through various influences within the organization. By understanding their own processes of knowledge creation within the organization, current policies and routines can be adjusted based on the knowledge creation requirements (Anand, et al., 2007). As seen within the previous models and studies, an organization's knowledge management and processes can be impacted by various organizational factors. Therefore, it is argued that further studies are needed to develop the connections between the organizational factors and knowledge management processes to provide the organization opportunities to identify and manage their specific factors influencing knowledge-intensive processes.

CHAPTER 3

RESEARCH METHODOLOGY

INTRODUCTION

The theory developed as part of the study was driven by the data collection and analysis within the context of a grounded theory approach. This approach was adopted as a basis for the study to understand knowledge creation in the context of KIBP. As argued by Gregor (2006), theory development is initialized through the research questions driving the study itself. Further, by seeking an explanation of the causal connections between events and phenomenon, a theory can be derived to interpret these connections (Corbin & Strauss, 1990). As such, the use of the grounded theory approach to the study can be appropriate for theory design (Myers, 2009). The strength of the grounded theory approach is the structure it provides for the analyzing processes and interpretation of the environment within the environment directly (Charmaz, 2005; Liao, 2003). Further, the methodology utilizes real-world situations and takes into consideration the influence of the human element toward the development of the theory after the data collection and analysis is conducted. The methodology works from the assumption that individuals within the environment are actively constructing the reality in which they work which in turns guides them toward future objectives (Isabella, 1990). As a result of this methodology, a dynamic approach to theory development is utilized (Suddaby, 2006).

Through subjective interpretation, the data which is systemically collected can be analyzed to build an understanding of the phenomena within the context of the study (Carroll & Swatman, 2000; Orlikowski & Baroudi, 1991). Therefore, the underlying objective behind grounded theory is the development of theory through data collection and interpretation (Glaser & Strauss, 1967). Through the use of the grounded theory approach, the data is collected and analyzed in detail through defined processes; evidence is collected to substantiate interpretations; and the result demonstrates the interactions between data collection and analysis (Myers, 2009). However, the challenges which exist across this approach include the coding and interpretation of the data itself. With the objective of

building a theory which can be generalized within and external to information systems, the data needs to be interpreted beyond the initial environment(s) in which the data resided.

In order to develop a theory which can be generalized across organizations, the study involves data collection from three different organizations and industries as shown in Table 3.

Table 3. Organizations

Industry	Organizational Details	KIBP Examples
Education	Private, liberal arts college offering 59 undergraduate and graduate programs.	Academic advising Grant writing Financial aid services
Financial	Institution providing personal, commercial, and farming financial services including checking and savings accounts, loans, insurance, and investment.	Loan processing Investment analysis Insurance services Customer service
Healthcare	Regional medical center and teaching hospital offering services in cancer treatment, cardiac care, maternity, emergency, orthopedics, physical rehabilitation, and wellness programs.	Patient diagnosis Patient admittance Billing Customer Service

Each organization demonstrated their own initiatives in order to fulfill their objectives and given the nature of each organization, different examples of knowledge-intensive processes can be presented (as shown in Table 3). Despite the different processes which might be utilized, the foundation for each is the knowledge available through the organization. By developing an understanding of how each organization utilizes knowledge creation activities within their knowledge-intensive business process, a general perspective can be formed to emphasize the mechanisms and conditions which exist to facilitate or support the knowledge creation activities within KIBP.

Within each of the selected organizations, individuals involved with knowledge-intensive business processes were interviewed. These individuals represented different managerial and staff levels which allow for the depiction of distinct components of the business processes. The different levels will represent: (1) upper level managers who provide the perspective of long-term organizational strategies, objectives, and problem-solving; (2) mid-level managers providing a look at day-to-day operations and who also have a role in decision-making activities, and (3) lower-level staff where functional perspectives of handling

tasks and processes occur on a daily basis. Through the interviews, individuals were asked a series of open-ended questions designed to solicit their perspective of how knowledge creation occurs within their knowledge-intensive processes (such as patient admission, diagnosis, loan analysis, and grant writing). As the interviews proceeded, common factors were revealed which led toward the generalization of the phenomenon.

Although research questions have been proposed, no specific propositions had been developed for the study. Rather, the analysis of the data gathered through the interviews was utilized to develop the theory defining the role of knowledge creation within knowledge-intensive business processes. To conduct the study, the approach suggested by Myers (2009) was utilized. The stages will include the following aspects as shown in Table 4.

Table 4. Grounded theory approach

Stage	Purpose
Data Collection	To obtain the data required through various sources (interviews, observations, documents, etc.) to develop theoretical ideas.
Data Analysis	To identify and describe the data and phenomenon gathered with the intent to categorize the data.
Data Interpretation	To refine the data analysis and further develop connections between the identified categories.
Theory Development	To utilize the connections identified to create propositions stating the linkages between the constructs of the study.

DATA COLLECTION

Within the data collection stage, the interviews served as the primary means for obtaining an understanding of the knowledge creation aspects within the knowledge-intensive processes. The interviews were conducted through a semi-structured format to allow both static and dynamic questions to be used. As the interviews and analysis proceeded, further exploration of topics was explored based on initial responses. The interviews were recorded for reference and to allow transcripts of each of session to be created. Although notes were taken during each interview, the note taking served only as a means of reference to key ideas presented through the responses to allow for the full attention the participant deserves during the interview. Before the start of each interview, participants were asked to read and sign a

letter of consent (as seen in Appendix B). If a participant felt a specific question would solicit a response which posed any perceived risk to them or the organization, the participant had the option to decline to answer the question. The intent of the interview was to gain their perspective related to the knowledge creation aspects within the context of the knowledge-intensive business processes and to maintain minimal risk to the participant. As the interviews were conducted, follow-up questions were needed to help clarify or explore processes at a deeper level. Follow-up questions or data collection involved additional interviews or the use of organizational materials (such as manuals and policies) which outlined specific tasks and activities.

The interviews were structured with three levels of questions: (1) initial questions provided a foundation to the participants' perspective on organizational factors and the knowledge-intensive processes, (2) intermediate questions used to examine the factors and environmental behaviors related to the knowledge-intensive processes, and (3) ending questions which signified the closing of the interview without an abrupt ending. The questions within each level are shown in Appendix A. The levels of questions were used to provide a structure to the interview process. Although the questions solicited similar responses from a participant, the overlap between the levels allowed for a topic to be explored further as needed. In total, 30 interviews were conducted with ten participants from each organization (as shown in Table 5). Six participants across the three organizations were selected for follow-up discussions to clarify and validate their responses. Due to the limited number of level 1 participants in the organizations, fewer interviews were conducted. A higher number of available participants were within Levels 2 and 3.

Table 5. Number of participants by organization

Industry	**Level 1**	**Level 2**	**Level 3**
Education	2	4	4
Financial	1	4	5
Healthcare	1	4	5
Total	4	12	14

At the conclusion of each interview, transcriptions were developed to allow for the conversation to be coded. By transcribing the responses, the interview could be reviewed at a later time to reflect on the nature of the responses. This allowed for an understanding of the knowledge-intensity within each process and the knowledge creation activities which may play a role.

DATA ANALYSIS

Simultaneously with the data collection, the data analysis stage provided the opportunity to develop a basic understanding of the environments within the organizations. This allowed for the data collection stage to be dynamic in order to explore any relevant components which might be discovered through the analysis (Corbin & Strauss, 1990). Through the data analysis, indicators were determined to help explain the environment. These indicators were used to develop the initial concepts to compare in order to determine similarities or differences in the knowledge creation aspects within KIBP in the organizations. As the analysis proceeded, the coding included a review of the concepts developed in order to group the concepts into categories representing a higher-level of understanding (Corbin & Strauss, 1990). The process of coding needed to be flexible to allow the codes to accurately reflect the data rather than attempting to code the data to fit any preconceived category. The coding included two main segments, initial and focused, as recommended by Charmaz (2006).

Chapter 4 and Chapter 5 present a detailed examination of the data analysis, interpretation, and theory development stages of the research.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

INTRODUCTION

As the data collection stages progressed, the data analysis stage occurred simultaneously and included two main stages of coding: initial and focused. The initial coding stage examined the transcribed interview responses on a line-by-line basis in order to detect similarities or differences. The codes utilized reflected the action perceived in the response and provided the opportunity to identify any gaps in the responses. By identifying potential gaps, interviews were refocused to obtain more relevant data. An example of the coding is provided in Table 6.

Table 6. Examples of interview coding

Interview sample	Initial Concepts	Initial Category	Relationship
We discussed the actions taken by the offices handling a particular part of the process.	Identifying task procedures	Organizational Controls	Tasks are dependent on requirements established by organization.
We also discovered that some offices needed to have additional information which wasn't being provided.	Understanding task requirements	Training	Development of individual knowledge required for task completion or connections.
The reports are handled through our Web-based reporting system.	Reporting application being used	Technology Support	KIBP tasks dependent on technology availability or support.
It takes time for an employee to learn the tasks and what needs to occur.	Time requirement for learning	Time	Task completion dependent on extended time periods of learning and experiences.

In a line-by-line analysis, each line can be coded based on the action which occurs in the language. For example 1 within Table 6, the participant mentioned the discussion of actions within an office in response to a question regarding what was discussed during meetings between multiple individuals. This led to a concept regarding the identification of task procedures. As these initial codes were developed, focused coding was used to determine the most significant aspects within the responses. Throughout this stage, the codes were compared to determine potential categories and identify patterns which might exist among the responses. As seen within the first example, a category of *Organizational Controls* was used to emphasis the dependency on organizational controls established such as policies and procedures. Further examples associated with this category include the following statements from participants:

> For me, it helps when the system has the information I need. If I don't have the information I need, it can slow me down. It helps to have the information up to date when I work with a client.

> There are so many touch points with the information which trigger responses from different areas. As staff members communicate with others, new knowledge can be developed because of changes in the regulations or policies. This knowledge is then brought back into the organization and can impact our own policies.

> The task or procedures drive what we do. We do have certain aspects which need to be covered…so we need to follow what is set by the organization.

Through all three organizations, various controls established by the organization were evident indicating the need for a category defining these requirements within the organization. As suggested by Palanisamy (2007), the articulation of organizational objectives support the connection between organizational controls and factors influencing knowledge processes.

The results of the information obtained through the data collection and subsequent data analysis stages of the grounded theory approach resulted in 102 concepts filtered down to 61 codes following the elimination of redundant codes and separated into nine initial

categories (learning, training, reasoning, time, technology, data requirements, organizational requirements, documentation, and external) later refined to six categories as shown in Table 7. Appendix C provides a look at the initial and filtered codes along with their definitions as used within the scope of the analysis and their associated final category.

Table 7. Initial and refined categories

Refined Categories	Initial Categories	Definition
KIBP Task Perspectives	Learning	Opportunities through which employees can gain education obtained through conferences, college courses, or manuals either prior or during employment with the organization to develop further understanding of KIBP tasks and knowledge.
KIBP Task Engagement	Training	Opportunities presented to employees to gain experiences and knowledge through personalized, classroom-style, formal or informal sessions
KIBP Task Reasoning	Reasoning	Indicating the skills associated with higher cognitive functions such as problem-solving, critical thinking, or ability to develop inferential arguments.
Time	Time	Indicating how long it takes to initiate KIBP tasks or knowledge creation activities.
Technological Resources	Technology	Use and support of information systems, database systems, and communication methods between individuals
Organizational Controls	Data Requirements; Organizational; Requirements Documentation; External	Data, policies, objectives, goals, reporting, manuals established for governing KIBP events or knowledge

Initial and focused codes were grouped according to similar representations and concepts in order to develop an explanation of the responses obtained through the participants and maintain a connection to the knowledge creation phenomenon being studied. Through refinement, it was determined the categories of Data Requirements, Organizational

Requirements, Documentation, and External could be combined to form one category, Organizational Controls, based on the codes identified within the initial groupings. These groups represented characteristics within the organizational environments. Codes within the categories are shown in Table 8 (and within Appendix C).

Table 8. Category and focused codes

Category	Focused Codes
KIBP Task Perspectives	Development of new perspective; Experiences build understanding; Intuition; Patience; External Training; Internal Training; Culture; Dynamic Environment; Environmental Conditions; Employee Impact; Value of Reports; Informal Documents
KIBP Task Engagement	Discussion of actions; Asking Questions; On-the-job training; Collaboration; Facilitating; Face-to-Face Meetings; Formal Meeting; Informal Meetings; Socialization; Discussions; Communication
Time	Dependency on Quick Response Time; Immediate Responses; Socialization Moves Knowledge Quicker; Extended Period of Time; Time Requirement for Learning; Knowledge Creation Delayed
KIBP Task Reasoning	Building Understanding; Recognition of Tasks; Identification of Tasks; Organizational Skills; Understanding Task Requirements; Understanding Task Connections
Technology	E-mail Exchanges; Phone Calls; Data Storage; Database System; Information System Dependency; Online Portal; Web-Based Reporting
Controls	Pre-defined Reporting Structure; Technology Support; Data Requirements; Data Entry; Standardization; Control Requirements; Organizational Requirements; Task Control Requirements; Process Steps; External Task Controls; Dependency on External Sources; Dependency on Documentation; External Documents; Internal Documents; Actions Dependent on Reports; Dependency on Other Departments; Task Dependency; Task Impact; Policies Impact

As seen within the extant literature, many factors (shown in Table 1) have been identified which influence knowledge creation activities. Kalpic and Bernus (2006) acknowledged that several components associated with organizational culture, strategy, and

purpose stimulate both KM and knowledge creation activities. In addition, Freeze and Robles-Flores (2005) support the fact that multiple factors serve as influences on these activities therefore, it is argued the identified six categories (shown in Table 8) all support knowledge creation activities in the context of KIBP in organizations.

AXIAL CATEGORIES

These axial categories provided a connection to the knowledge creation within the organizations in association with their KIBP tasks. The stage of interpretation served as the means to further refine the categories and develop the connections between the main categories identified. Through the interpretation and refinement of these categories, each can be defined within the scope of the research.

(1) *KIBP Task Perspective* relates to the experiences obtained through both internal and external influences which develop the overall understanding of the employee knowledge required for KIBP tasks. As noted by one participant, "The employee's perspective allowed her/him to make adjustments and handle the task differently." Developing this perspective is an important step associated with KIBP as seen in the following statement by another participant:

> Through discussions with others, it is apparent that each person has a different perspective on the situation. They are using information and knowledge provided to them through reports and then use that information as needed according to the situation.

Developing and enhancing this perspective is obtained through the opportunities provided by the organization through both internal and external training experiences. It was noted by many participants that training opportunities were an important aspect of their personal and professional development. Although opportunities may not have been offered on a regular basis, it was evident the organizations encouraged employees to participate in these activities as needed and within their schedules. The following excerpts are reflective of the positive comments participants offered:

> You can develop a better perspective through talking and communicating with others. Asking questions and keeping track of what is discussed. I think it comes down to a willingness to learn. If someone is close minded or doesn't see the need for the interactions, then that person isn't going to learn as much as someone who is asking questions and speaking to others.

> Any time you are involved in training, people are able to explain to others what your job duties are and how they may be handled, why we do it, and what is important to us.

Previous literature and studies (Gold, et al., 2001; Pee, et al., 2010) support the need for developing this perspective within knowledge workers. As argued by these studies, knowledge workers and organizations need to leverage existing knowledge to develop new knowledge. As such, knowledge workers need to have the opportunities to develop their KIBP Task Perspectives in relation to their association with their KIBP.

(2) *KIBP Task Engagement* is associated with the opportunities for informal or formal activities which facilitate the interactions between individuals. As such, these activities provide the mechanisms through which knowledge can be shared in order to build a better understanding of tasks and processes. Although formal engagement activities were scheduled, many participants found the use of these opportunities less appealing than the informal opportunities. Often, these informal sessions were impromptu meetings or gatherings to allow individuals to discuss their situations with others and develop a sense of how a situation could have been handled differently. Essentially, these opportunities provided the conditions in which individuals could share, learn, and enhance their interactions with other employees. Participants provided their thoughts on these opportunities in the following examples:

> We come from different offices, but have a good understanding of how the organization operates. Bringing this knowledge to the meeting and then combining it with what we do provides a good opportunity to build new knowledge.

> I think verbal communication is important and makes us a more cohesive office. Face-to-face communication is key. Sometimes we can find a solution simply by talking through the issue and going through the situation.
>
> Even informal opportunities provide a chance for staff to discuss new ideas. We often find ourselves working in a busy environment and perhaps we don't feel there is time for that type of thing, but I think encouraging the informal meetings is good. These interactions can be beneficial for all members.

As suggested by Nelson and Cooprider (1996), one aspect for consideration for developing engagement opportunities is the building of trusting relationships between individuals and groups. Through a trusting environment, knowledge workers are able to build their opportunities for impromptu sessions (as mentioned by the participants) and develop their ability for open communication channels.

(3) *Time* indicates the dependency on the response and completion time of KIBP tasks along with the ability to gain experiences required. Often, participants noted that quicker responses to inquiries were required to proceed with KIBP tasks, but it was also emphasized that it takes time to learn the skills and knowledge required for the KIBP tasks. Extended periods of time associated with KIBP task completion was also evident as the complexity, or perceived complexity, of the KIBP task increased. The more perceived complexity indicated the need for more hands-on experiences, often found through engagement opportunities, in order to obtain the knowledge required for the KIBP task. Within the organizations, many participants had been employed within their areas for extended periods. As noted by one participant, "It comes back to experiences. It takes time for an employee to learn the tasks and what needs to occur." Another participant stated, "The quicker the knowledge is provided back to the individuals or stored in the system; the next step can be handled better." In addition, two other participants reflected on their KIBP experiences and activities:

> We often talk about new information face-to-face. Sometimes a phone call works. I think the personal communication is the best so any questions can be answered

quicker. E-mail tends to be slower, but is used a lot. Talking to someone in person is a faster method.

A lot of training is done one-on-one and through hands-on experiences. Before an employee works on their own, we generally have someone shadow them for a short time to make sure they have a good sense of what is happening.

Although a few individuals were within five years of employment, the majority of the participants had been with their organizations or at least within a related field for multiple years as shown in Table 9.

Table 9. Years of employment

Organization	**Less than 5 years**	**6 – 10 years**	**Greater than 10 years**
Education	1	3	6
Financial	1	6	3
Healthcare	2	4	4
Total	4 (13.3%)	13 (43.3%)	13 (43.3%)

Employee skills including their education, technical abilities, training, and decision-making ability all require extended periods of time. As argued by Harrison et al. (1997), Kettinger and Grover (1995), knowledge workers need to have the opportunities to develop their abilities and skills. Although these opportunities can be provided and experienced prior to working with KIBP tasks, it is essential for organizations to provide ongoing activities for skill development. Thus, extended periods of time is required in order to allow knowledge workers to build their skills; however, these extended periods of time also negatively impact the ability to develop new knowledge for the organization at a quicker pace.

(4) *KIBP Task Reasoning* skills enhance the ability to form appropriate conclusions, judgments, or inferences based on the knowledge achieved through KIBP task completion. Reasoning skills provide the opportunity for employees to develop new knowledge to be used at a different level beyond their own personal use. As one participant reflected:

> I think it helps to have people step out of their own areas and recognize what others go through. Then, they have a better understanding of what may be needed. I think, overall, it helps us function better together.

By applying their own judgment and inferences, knowledge can be created which perhaps impacts the organizational strategies and polices. Although knowledge creation can occur without employees demonstrating reasoning skills, developing this ability provides opportunities to examine KIBP tasks and explore how they can be enhanced or altered in order to meet the dynamic need of the organization. As noted by two executives in relation to the reasoning skills of their employees:

> Staff members develop a better understanding of the connections between what they are doing and the next step. Staff members can take the information, understand what is needed and when, and can make changes according to that information.

> This is something that simply boils down to your personality, work ethic, and your understanding of people. This is not something that can be readily trained in others. There are people with different backgrounds, people with different attitudes, and people with different thought processes. We want employees who understand what it means to take good care of their customers. I want someone who understands the whole picture. You become less valuable for the organization if you can't ask questions about why we do that or ask if there is a better way to do that.

Hussi (2004) and Nonaka and Toyama (2003) argued that organizational leaders need to have the ability to perceive changes in their organizational environments. As such, organizational leaders need to identify the opportunities through which knowledge workers can pursue ongoing dialogues with each other and participate in an open environment to exchange ideas, thoughts, and suggestions in order to develop the KIBP Task Reasoning skills of the knowledge workers.

(5) *Technological Resources* outlines the infrastructure within the organization in relation to the information systems or other components actively used and supported. Seen as a key component for KIBP tasks and processes, technological resources represent the means by which data is stored, accessed, and maintained, but also supporting the various aspects of how individuals interact with other. For example, participants noted the need for information technology to provide their data in an appropriate manner and through mechanisms which provided the data more quickly to meet the needs of the KIBP task. For example, participants noted the following:

> If the information in the [database] system is not correct, the rest of the tasks will not go well. Everything is dependent on the information in the system.

> We also use our [online] portal to maintain notes for the staff. This is accessed by members of the staff and it contains various documents on policies, procedures, and other stuff as needed.

> Information and data is stored within our database system…electronic records can then be shared with others within our Intranet.

Although E-mail was seen as a common method for sharing and exchanging data and information, it was often seen as a slower process without immediate responses. Phone calls were often viewed as a preferred mechanism for obtaining data or information. One participant stated, "We do use e-mail quite a bit to send information to either individuals or groups….Phone calls provided more personal conversations as well."

With the use of technologies, individuals also placed an importance on the support provided through their Information Technology (IT) departments. It was these offices which not only provided the various technologies, but also the training and support to employees using these components. For example, two participants reflected on their connection to their own IT departments:

> With the help of Information Services, we also use the online-reporting application. This is directly connected to our database system.

> IT provided the support to determine which data fields were needed for the reports and help provide the templates for the queries when accessing the database system. IT definitely help developed the means for getting reports created.

The infrastructure components as seen within technological resources can be established to support these resources. These organizational mechanisms are then used to provide the foundation for working with and supporting knowledge creation activities in the context of KIBP (Bhatt & Grover, 2005; Dalmaris, et al., 2007).

(6) *Organizational Controls* include both data and organizational requirements established through policies or regulations which define KIBP task sequence or procedures. The organizational controls, defined through data, policies, and manuals, provide an influence on how and when KIBP tasks are initiated or continued. Participants across the three organizations recognized the impact these controls had over their KIBP tasks and two statements provide their thoughts:

> Each task has its own objectives based on that department's responsibilities within the organization.

> We need to know when the data is available. There are tasks which rely on other tasks being completed first. In some cases, this might mean reports need to be generated and sent or provided to the next office.

As noted by many participants, the controls can be provided through both internal and external influences. Two participants reflected:

> In some cases, tasks are completed due to the requirements set forth by the federal or state government for auditing process. Departments will also set their objectives according to the organizational need.

> Organizational policies dictate tasks, but policies may also reflect the regulations and requirements through federal and state guidelines. The information system was designed to obtain the required data and assist in these record keeping aspects. If this data is not correct, the tasks will not go well.

In addition, organizational controls can be viewed as data requirements established through manuals or policies within the organization. As such, participants recognized the need to be aware of these policies and initiate or continue KIBP tasks as needed according to these controls. Participants stated their perspective of organizational controls:

> The information needed is based on the requirements of the organizations. We have certain details which are outlined for us as part of the duties.

> Changes in the regulations or policies impact how the staff works through their tasks.

> Documents are also used to drive KIBP tasks. These documents include policy manuals, training materials, and even external influences such as industry regulations.

Hussi (2004) further argued that organizational controls such as policies and procedures need to be defined which reflect the organizational objectives. In addition, these controls provide the structure through which the organization can define their efforts to support knowledge workers in their KIBP tasks and activities to facilitate knowledge creation opportunities.

Along with the above definitions of the six axial categories, the relationships between the categories can be further analyzed and interpreted. In addition, statements assisting in the interpretation can be reviewed based on the characteristics of the categories in association with new knowledge being developed. One participant noted:

> As new knowledge is obtained, the current tasks are reviewed to see what changes need to be made. Perhaps the task doesn't need to change that much, but the knowledge may be more for the employee and how they handle a task.

The participant viewed new knowledge as an impact in how organizational controls may be altered according to the newly created knowledge; however, it is also evident the participant viewed the new knowledge as a means directly influencing himself/herself. In addition, other participants noted similar thoughts on knowledge being developed and its impact on their own understanding and perspectives. Additionally, participants reflected:

> I think the new knowledge was developed when the staff member understood the task through a different perspective. This perspective allowed [the staff member] to make adjustments and handle the task differently.

> I would say the employee gains the most from the new knowledge simply because they've learned something new or developed a different perspective on the information.

> Through open discussions, each of us was able to gain a new perspective in regards to the topic at hand leading toward new personal knowledge.

It was also noted by many participants the need to have knowledge move efficiently between individuals or groups to facilitate the next steps in the task or process. Again, this emphasizes the need for time to be a consideration within KIBP task completion and knowledge creation. Accordingly, time can be further seen as an influence over how quickly an individual is able to develop an understanding and perspective of the KIBP tasks and the knowledge required. As such, participants found:

> The [new] knowledge needs to be provided quickly. Since there can be multiple steps in the process, it can impact the next part.

> We can't proceed with a task until the previous one is completed…the time frame is extended. Until we see the information, we can't get a sense of what's needed next in order to accomplish the task.

> Staff need to know to ask the question…which begins in the training. This comes back to experiences. It takes time for an employee to learn the tasks and what needs to occur.

The use of technological resources and support of these resources also continued to be seen as key part of the overall structure in order to provide the mechanisms or conditions required for KIBP tasks. Further statements provided by participants reflected:

> The [online] portal is more commonly used. I know people are using the portal as a means to share information.

> The reports are handled through our web-based system…which allows a person to generate reports for individual or group use. It is directly connected to our database system so the data pulled is actually the most up-to-date data available.

> Our IT department will help create the reports, provide training, and assistance.

> I enter the data into our database system according to the requirements. I need to make sure we have the appropriate fields completed based on what is needed for reports for the various offices. I need to make sure everything is correct and complete as possible.

Within the above examples, employees viewed their experiences and interactions with others as a means to develop new knowledge and use technology as a mechanism to work with the information and knowledge. As such, knowledge creation can be generated as part of the process and thus providing new knowledge for the employee and organization which is embedded into each person's own experiences and organizational strategies and controls. As noted by one participant:

> Because of new information received through the task, new knowledge is brought back to us. Because of that information, we may have to change the way we work a task or at least need to keep that information on file or remember it.

Through the extant literature, studies have stated the need for organizations to integrate their knowledge creation activities across the entire organizational environment (Gold, et al., 2001). In addition, multiple factors can be seen as having an influence on the knowledge creation activities (Freeze & Robles-Flores, 2005; Kalpic & Bernus, 2006) and therefore it is argued the above categories identified through the study serve as a means for furthering the connection between KIBP and knowledge creation activities.

ORGANIZATIONAL SUMMARY

First, it was evident the organizations placed value on their KIBP tasks and implemented conditions and mechanisms to support these tasks. Training was a common aspect and seen as a key mechanism for providing knowledge and experience to the employees; however, training was handled in different methods across the organization. Within Education, training was deemed to be more ad hoc and not formally scheduled. If formal training was required, it was generally done on a larger scale which included multiple individuals across departments. These types of sessions were found to be scheduled and handled through the information technology department since training often involved the use of information systems, database management systems, or general technologies supported through the IT department. Both financial and healthcare organizations utilized both formal and informal training opportunities on a regular basis. Formal training opportunities were found to be scheduled either on a bi-weekly or monthly basis. These opportunities provided the employees within the department to meet and discuss tasks and procedures. However, within each of the organizations, these formal training sessions were often viewed as a "one-way" session indicating the managers or supervisors would provide the information without much interaction on the part of the employees attending the sessions. This seemed to be especially true within the financial and healthcare settings. Informal opportunities for interactions and training were seen as a key method for learning the KIBP tasks and gain the knowledge needed for the task. These sessions often occurred at the initiation of the employees and provided opportunities for two or more employees to discuss a specific

situation which might have occurred. These types of sessions also provided a more immediate reaction or discussion to the situation and allowed for a quicker response to occur within the situation.

Second, active communication channels between individuals or groups were perceived as a key condition for the KIBP tasks and knowledge creation across the three organizations. Participants within the three organizations expressed the desire and need for effective communication between individuals; however, participants also expressed levels of frustration with how or when communication occurred. Each organization demonstrated use of several methods for communication including E-mail, documents, online portals, phone, and teleconferencing techniques. Each was viewed as an important aspect, but most participants desired the face-to-face or personal communications as a means to discuss KIBP tasks and the knowledge within the task. However, the face-to-face opportunities often were not available either due to time commitments or other constraints preventing the action to occur. Therefore, electronic methods such as E-mail were found to be another key method. Despite the use of these electronic methods, they were often perceived as slow, inconsistent, or even unavailable. For instance, the financial organization utilized Skype for teleconferencing for meetings and training to accommodate the distance between employees. Although it was available and was used on occasion, the perception of this technology was seen as "unreliable," "not perfect," and "challenging" due to the use of their Internet services and network capabilities. E-mail provided a more reliable method and allowed for individuals to send documents to each other which could be stored for later reference. The challenge; however, was the lack of immediate responses between individuals. Therefore, when the situation warranted, phone calls or face-to-face communication was utilized and valued more highly.

A third aspect for consideration is the use of organizational controls within the three organizations. Each of the organizations relied on different forms of organizational controls associated with data requirements, policies governing sequence of KIBP tasks, and external requirements. Although KIBP are often tasks which are not pre-defined, the organizations did have KIBP tasks which required the use of specific sets of data outlined by the organization or even external influences such as federal or state regulations. Data requirements served as means of initiating certain KIBP tasks and influenced how or when subsequent tasks could continue or be initiated. Other controls included defined policies through both internal and

external environments. Each organization had established policies which influenced KIBP tasks and often served as a source of knowledge for the task. For example, within the education organization, one KIBP task was focused on the evaluation of satisfactory student progress at the conclusion of each academic term and year. To initiate the task, the data required had to be entered into the database system according to the timelines and procedures established by the organization. Therefore, the KIBP is dependent on both the data and organizational controls established. In addition, this particular task is also dependent on the regulations established by federal and state guidelines given the connection between the results of academic progress reports and financial aspects.

Through the analysis, the relationship between the categories is interpreted as a cyclical process. As shown in Figure 3, the relationship between the categories within KIBP impact how KIBP tasks are completed or handled which can lead toward the creation of new knowledge for the individual or organization. Viewed as a cyclical process surrounding the KIBP task, the *Technological Resources, Time,* and *Organizational Controls* modify how employees engage with others (*KIBP Task Engagement*), build perspectives (*KIBP Task Perspective*), and develop reasoning skills (*KIBP Task Reasoning*) in order to initiate and complete KIBP tasks. As a result of the cyclical process, new knowledge can be developed and introduced back to the process through the available technological resources, time, and organizational controls.

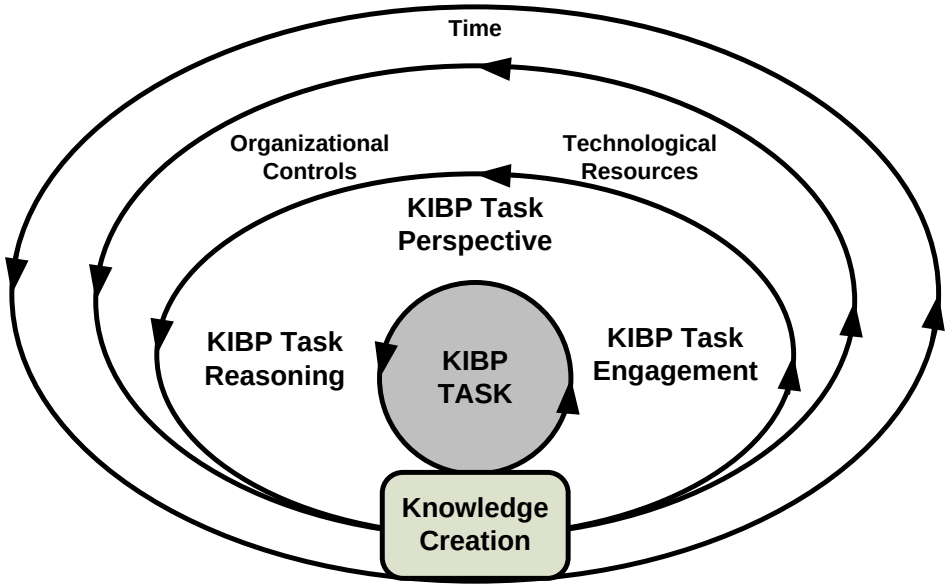

Figure 3. Relationships between categories and KIBP

Based on these observed relationships, in combination, these categories then comprise the identified core category of *KIBP Social Competencies* (introduced in Figure 4) and discussed in detail in Chapter 5.

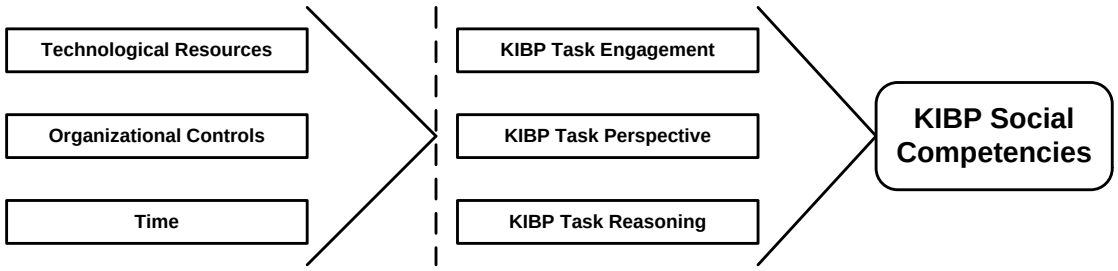

Figure 4. Core category of KIBP Social Competencies

The core category, *KIBP Social Competencies*, represents the characteristics found through the experiences of the participants in the study. Through time, and supported by the technological resources and organizational controls, employees rely on their ability to build KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning in order to enhance their overall social competency. In turn, social competencies then provide a unique setting from which knowledge creation occurs in the context of KIBP. When asked about the development of new knowledge and its connection to KIBP tasks, participants responded:

> New knowledge…a better understanding…a better comprehension of different tasks is developed. I think we are building new knowledge on the individual level and for the organization. There is always something more we can share with other people.
>
> There are always new pieces of information being gained through what individuals discover and then share with others.
>
> We share through training sessions and so forth. The piece of the puzzle…is the 'gut' piece; it's the intuition of the employee and how or why they made a decision. This can then be discussed within our training and with others.
>
> Since we are able to learn more about each of our areas a bit more, we are able to take that information and learn from it. We were able to take that information and then create knowledge based on our new perspectives on each of the areas involved.

Given the characteristics seen within KIBP (as stated in Chapter 1), organizations need to support the development of social competencies which will increase the ability of the employees to develop new knowledge for the organization. Review of these relationships assisted in the development of the core category, KIBP social competencies, and theoretical framework (discussed in Chapter 5) representing how knowledge creation occurs in the context of KIBP. Based on the organizational controls, employees who are able to work through KIBP tasks utilizing higher levels of KIBP Task Engagement have the opportunity to develop a deeper KIBP Task Perspective leading toward higher KIBP Task Reasoning skills. Thus, employees are able to contribute to the knowledge creation activities at a level that also impacts organizational strategies and objectives in addition to developing new knowledge on a personal level.

VALIDITY

Within the context of the study, the validity of the grounded theory approach and analysis can be determined. Yin (2003) describes four validity tests to determine the quality of a research study: (1) construct validity, (2) internal validity, (3) external validity, and (4) reliability.

Construct Validity

To satisfy construct validity, it is important to establish the appropriate operational measures for the phenomenon being studied. For this research, the phenomenon being studied was related to understanding knowledge creation within the context of knowledge-intensive business processes. Yin (2003) suggests three aspects of how construct validity can be satisfied: (1) utilization of multiple sources for data collection, (2) establishing connections between evidence collected, and (3) having draft report reviewed by key participants within the study.

To satisfy the first criteria, three organizations were selected for the study across three types of industries: education, financial, and healthcare. This allowed for the use of triangulation in order to provide a better understanding of what is occurring within the environments (Trochim & Donnelly, 2008). The organizations were selected due to their inherent differences: education representing a non-profit organization with financial (providing banking, investment, and loan opportunities) and healthcare (providing health-

related services) representing traditional customer-service oriented, for-profit organizations. In addition, each organization represents different sizes of organizations. The financial institution selected employees less than 50 individuals; the education institution employs over 200 individuals; and the healthcare institution employs over 4000 employees across multiple locations and clinics. Within each organization, individuals were selected for the collection of data through semi-structured interviews. Since the study focused on knowledge-intensive business processes, the individuals selected were associated directly with the KIBP task within their respective organizations. In addition, individuals were selected based on their staffing level within the area being studied. As shown in Table 5, individuals represented three levels (designated as one, two, and three) within upper, middle, and lower staff classifications. By utilizing the three levels, perceptions of knowledge creation aspects within KIBP were obtained. Through the use of the individuals directly involved with KIBP, the data collection was expanded to also include a review of documents including personal "cheat sheets" (as described by the participants), organizational manuals provided through both internal and external sources (federal and state regulations). Although copies of these documents were not able to be obtained for future reference outside of the organization, the discussion within the interviews associated with these documents provided additional sources of data collection and provided evidence that KIBP within these organizations were partially modified by organizational controls. The interpretation and developed theory were a result of these experiences provided by each individual across organizations in different industries rather than linked to any one person, organization, or industry.

Second, the connection between the evidence collected was evident based on the relationship between the individuals and their KIBP tasks. Since the structure of the interview provided direct questions (as shown in Appendix A) related to knowledge creation and KIBP, the responses obtained through the participants were directly related to the phenomenon which assisted in establishing a connection between the responses. As mentioned above, the participants also provided connections to other sources of data in relation to the research study. The connections between the evidence were also established beyond the formation of the interview questions. By utilizing the grounded theory stages (as mentioned in Chapter 3), the questions were connected to the data collection stage. Utilizing these stages provided the protocol required to conduct the analysis, interpretation, and theory development aspects of

the study. Interviews were recorded and then transcribed using the ATLAS.ti software application designed for qualitative analysis. This allowed for the linking between transcribed interviews, codes, and quotations to be established in addition to the physical storage of the interviews and transcripts.

Third, additional interviews with several participants were also conducted to provide an opportunity to review and clarify responses. Within these follow-up sessions, the initial draft of the relationship model (as shown in Figure 2 and 3) were discussed. Participants indicated their understanding of the initial model and stated their approval and verification of the obtained responses. Although the participants acknowledged their lack of information in relation to the concept of knowledge management activities, the idea of knowledge creation was understood through the interviews. As many participants noted, they realized new knowledge was being obtained, but never heard it mentioned in the terms used within the study.

Based on these criteria, construct validity is strengthened through the use of multiple sources of data collection, establishing a connection between the evidence collected, and review of initial drafts of the proposed model and responses with selected participants. Each aspect is related to the phenomenon being studied and why selected evidence reflects the conditions of the environment in which the phenomenon existed.

Internal Validity

Internal validity seeks to establish causal relationships and demonstrate that conditions link to other conditions within the studied environment (Yin, 2003). Whereas construct validity is more related to the data collection phase of the study, internal validity is concerned with the data analysis aspects. Within internal validity, four principles can be addressed as suggested by Yin (2003).

First, all evidence which was available for the study was reviewed or discussed within the constraints established by the organizations. Although interviews were permitted to occur (and be recorded) within the organizations, it was noted by the supervisors that interviews needed to be kept within a reasonable time frame in order to not disrupt the working environment of the offices. However, the interviews still provided the opportunity to discuss the phenomenon being studied with participants and obtain data related to the research questions. Through the interviews, participants often noted their use of manuals, policies, and

informal documents related to their ability to reference knowledge for KIBP activities; however, these documents were not permitted to be distributed outside the boundaries of these offices. Despite this limitation in data collection, the participants were asked questions related to these documents to determine their use and perceived value. When asked about the use of these types of documents as a means for developing knowledge, participants responded:

> When I was a new employee, I read everything…manuals, handbooks…front to back and often go back to read them again.

> They [the documents] are very helpful to find different items. This allows us to know what other offices can offer so we can direct people as needed.

> We kept tip sheets on different things we knew we needed…in case we had to go back for review. These are sheets which can be used by all the staff. These tip sheets have been loaded into the system so they can be accessed by employees and can be updated as needed.

As interviews were completed, transcriptions were developed through the use of the ATLAS.ti software application in order to conduct the line-by-line analysis (as referenced in Chapter 4). The process of coding allowed for the transcribed interviews to be analyzed in order to identify relationships. Codes were grouped according to their either their similarities or differences. Of the 102 different codes developed, nine groups initially arose; however, due to similarities, six groups emerged through the interpretation based on 61 distinct concepts (as referenced in Chapter 4 and Appendix C). Thus, the groups and their definitions were a result of comparing the initial findings against each other through an iterative process.

Second, the analysis conducted suggests that knowledge creation in the context of KIBP occurs through social competencies (KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning). Given the subjective nature of the analysis conducted, it is acknowledged that alternative explanations or interpretations may be possible through the line-by-line analysis; however, an argument can be made to support the interpretation of the study based on the evidence collected as discussed within Chapter 4. Through the review of

the extant literature, it is noted that knowledge creation occurs and is connected to individuals within the organization (Alavi & Leidner, 2001; Gold, et al., 2001; Janz & Prasarnphanich, 2003; Nonaka, 1991; Nonaka, et al., 2000). Further, as argued by Freeze and Robles-Flores (2005), identifying one specific factor which alone influences knowledge creation is difficult. As stated, knowledge creation occurs through individuals. Although it is possible for knowledge to be developed on an individual level, the individual still will exhibit a level of KIBP Task Perspective demonstrating a level of higher understanding of the data, knowledge, and KIBP task. If the KIBP tasks are to be altered or impact organizational or personal objectives, the individual will most likely demonstrate the ability to infer judgments, draw conclusions, and therefore exhibit KIBP Task Reasoning. It is also likely an individual will have some type of interaction with others through either face-to-face or electronic mechanisms (such as E-mail, teleconferencing, or phone calls) which leads toward engagement opportunities related to the KIBP tasks. Given the characteristics of KIBP (as discussed in Chapter 1), it is plausible to assume that the modifiers of organizational controls, technological resources, and time will also be associated with the KIBP task.

The analysis of the transcribed interviews supports the argument that six categories can be identified within the phenomenon and related to the development of new knowledge. Knowledge creation in the context of KIBP is argued to exist based on the employee's level of KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning which can be modified through the technological resources, organizational controls, and time associated with the KIBP. Two executives interviewed stated:

> Staff need to know to ask the right questions…which begins in the training. If they don't ask the right questions or don't know when to ask the questions, then the information obtained has a higher chance of being wrong. It comes back to experiences. It takes time for an employee to learn the tasks and what needs to occur. A lot of training is done one-on-one and through hands-on experiences.

> When people are involved in a project together, they share ideas, knowledge as needed. I think we have a good sense of collaboration.

By providing opportunities for individuals to interact with others, the ability to develop the overall perspective and reasoning was seen to exist within the organizations. Through the interpretation, knowledge was developed on a personal and organization level as these interactions occurred. As noted within the responses:

> As staff communicate with other offices, new knowledge can be developed…this knowledge is then brought back into the organization and can impact our own policies or how tasks get completed.

> Each customer will be different so your reaction or response to one customer may be different in comparison to another based on the need. Dealing with the customers come from being taught and shown what is appropriate, but it comes from working directly with the customer.

However, maintaining the level of communication and engagement between individuals is essential to developing knowledge and building reasoning skill. For example, participants commented:

> I think the biggest challenge was simply the lack of understanding of the current processes across the organization. I think having these conversations allowed for a better understanding to happen. The challenge then is to have that continue.

> Your perspective of providing customer service will be different from another person's perspective. You may have received the similar type of training, but because of your background and experiences, how you handle and work with customers can be quite different.

> The one thing we need to realize is that [these experiences] helps to build your perspective of what customer service is all about.

> We try to figure out how to put it all together so I could have someone…follow the steps to help build their knowledge. It is the sort of working tool for that person who is very knowledgeable and begins to develop, in my mind, their 'gut' intuition that begins to set the tone.

Third, the analysis and interpretation is supported given they have directly addressed the phenomenon being studied and maintained the focus on this area. Issues were not addressed which fell outside the scope of the study. For example, given the use of three organizations, it is possible that further comparisons could be made between organizational types; however, this type of research question was not within the boundaries established by this study and therefore not addressed beyond an organizational summary.

Fourth, the analysis and interpretation for the study was supported through prior knowledge within the area of knowledge management activities and knowledge-intensive business processes. Extensive research has been done to gain awareness of extant literature within the Information Systems discipline which has further developed knowledge of the subject area. The analysis was further supported through the guidance and assistance of experts associated with the topic and exposure to the issues being researched. In addition, following the stages of the grounded theory approach as suggested by Charmaz (2005, 2006) and Myers (2009; 2007) provided the foundation for the methodology and strategies utilized for the study.

External Validity

To the meet the external validity, organizations across three different industries were utilized for the research study (as discussed in Chapter 3). Participants across the organizations were asked a series of questions similar in structure in order to replicate the process (as shown in Appendix A). Although specific questions differed slightly due to the responses provided by each participant, the objective and structure of the interviews remained the same to provide consistency across individuals and organizations. The use of multiple organizations and industries provided an opportunity for the study to be more robust in comparison to studying a single organization. Utilizing multiple organizations provided the opportunity to replicate the study to provide a general interpretation as a result. Based on prior knowledge associated with knowledge creation and KIBP, it was believed the external

conditions would not alter significantly to produce different results associated with the phenomenon. Therefore, it was decided that a smaller number of organizations would be sufficient to provide an analysis.

Given the use of the interview questions, the study could be replicated; however, the nature of the environment and individual perspectives may alter over time thus providing a chance for different results to be obtained. In addition, the questions utilized for the interviews were reviewed by an external participant who provided critical feedback regarding the nature of the questions to ensure the questions were focused on the research questions surrounding this study.

Reliability

This research study followed the guidelines set through the grounded theory approach which outlined the overall structure of the study. Chapter 3 provides a detailed perspective of the research methodology utilized for the study. The stages of the study began with the data collection. Selection of the organizations was dependent on discussions with supervisors within the organizations types. These discussions included an introduction and motive for the study along with the method for selecting participants. Supervisors provided suggestions regarding the location in which interviews would take place and availability of individuals. Interviews were digitally recorded for later reference and transcription. Following these conversations, a schedule was proposed in collaboration with the supervisors to allow the interviews to be conducted. Interviews were conducted following the developed questions (Appendix A) and later transcribed for analysis. Each interview utilized a semi-structured approach and questions were separated into three main levels: (1) initial, (2) intermediate, and (3) ending. Although responses between levels may be similar in nature, each level was designed to provide different inquiries related to the employee's experiences, background, relation to KIBP, and perceptions of knowledge creation.

To help with the analysis, the ATLAS.ti Qualitative Data Analysis software (version 7) was utilized. Each interview was transcribed and stored utilizing the software functions. The software provided the mechanisms for conducting line-by-line coding and documentation of quotations and developed codes. As shown in Figure 5, the ATLAS.ti software provided the means for working with the transcribed interviews and linking codes to a selected section.

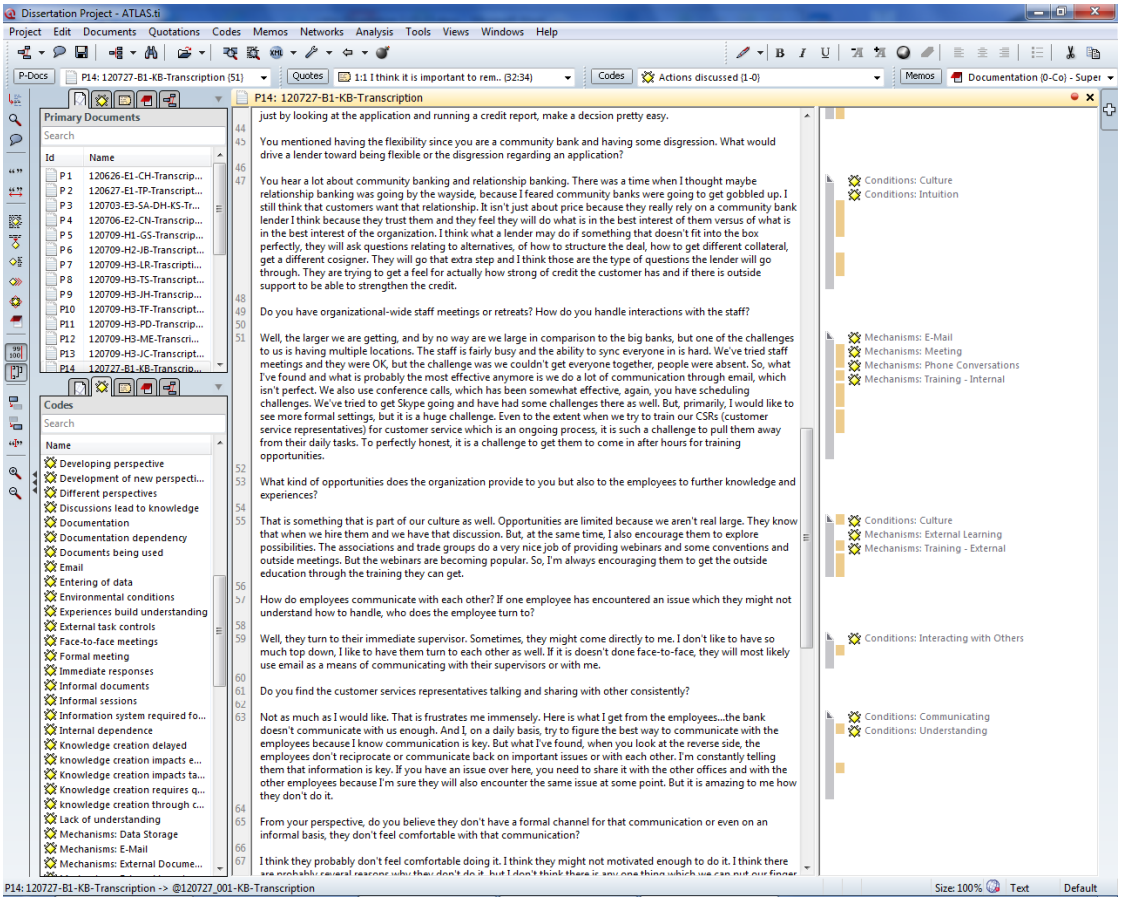

Figure 5. ATLAS.ti screen shot

From the transcriptions, coding was completed through the software which allowed the codes to be reviewed and exported to Microsoft Word 2010. Transcriptions were handled through a consistent process to ensure each interview was analyzed in the same manner as other interviews. Microsoft Visio 2007 was also utilized as a method for modeling the theoretical framework for use within the dissertation.

In parallel with the data collection stage, data analysis and interpretation was conducted in order to help refine data collection processes as needed. Utilizing the results of the analysis, the identified categories provided the means for the proposed theoretical model (as discussed in Chapter 5).

CHAPTER 5

RESULTS

INTRODUCTION

The intent of the study was to develop a theoretical framework building an understanding of knowledge creation in the context of knowledge-intensive business processes. The grounded theory approach to theory development was utilized to analyze data obtained through interviews involving participants across three organizations and industries. The interviews explored this phenomenon through the experiences shared by the participants within these interviews with an emphasis placed on their connections to KIBP tasks and knowledge creation activities. The theory proposes that knowledge creation in the context of KIBP occurs when the *KIBP Social Competencies* of the employees are high which then serves the organization in a more meaningful manner. This is achieved by increasing the opportunities for employees to be better engaged through interactions associated with KIBP, develop perspectives related to the KIBP tasks, and enhancing their reasoning skills for KIBP. This chapter focuses on the examination of this core category and the supporting components (through six propositions) that comprise the emergent theory.

CORE CATEGORY: KIBP SOCIAL COMPETENCIES

The core category, KIBP social competencies, is the combination of the characteristics found within the axial categories of KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning. This was demonstrated through the responses provided by the participants in relation to their experiences within KIBP tasks and processes (as discussed within Chapter 4). By its defined characteristics, KIBP are seen as core processes for an organization. It becomes evident that knowledge serves as the key resource for this level of processes. As such, knowledge creation in the context of KIBP becomes an important aspect for consideration by the organization. Therefore, understanding how knowledge creation occurs in this context can be viewed as a necessary step for organizations. Within social competencies, an employee is able to build new representations of their environment and develop their own cognitive abilities.

The antecedents which lead toward KIBP social competency for employees are through the interconnections between information technology and the environmental culture within the organization (Reich & Benbasat, 2000). When asked about the importance of learning the organizational culture, participants noted the following:

> It happens through contributing to the [organizational] community. I think a lot of it is being part of the [organization] and picking up its feel and culture…its values and the things we say and what we do.

> I think it comes down to being an organization which has good ethics. I think it is important for the public as well as our immediate customer to trust us, think we are professional, and I think, above all, we have a lot of integrity not only with our employees but with the customers. It is a philosophy that comes from the culture of the environment.

> Just knowing we do need to do a lot of things in a short amount of time. I think having a [information] system which helps with that has been one of the better things.

It is through these components which enhance the engagement opportunities between employees and the development of a deeper understanding of how KIBP tasks can be handled. Another participant stated:

> By getting a sense of how another office handles a task, we gain a better perspective of how everything works. With a new perspective, I think we learn to ask better questions which leads to better conversations. Then, new knowledge can perhaps be developed because of that better understanding.

By increasing the KIBP Task Perspective, the development of new knowledge which impacts organizational objectives can occur. Several participants in the study reflected on their organizational culture and its impact on KIBP tasks. One executive stated the culture of the

organization needs to emphasize what is important to its operations in order to handle the KIBP task appropriately as noted:

> We do have policies in place…which do address that attitude. But I think primarily, it is accomplished on a day-to-day basis when I'm communicating to the employees about issues, problems, or opportunities. I think that is where it comes from. I think they gain awareness of what I expect and just by our day-to-day operations.

Employees need to be informed of this importance to build their level of understanding of how the KIBP tasks are connected to the organization as a whole. This is accomplished by providing the supporting structures (such as information systems, policies, and training) to employees. Participants reflected on their ability to further develop their understanding with the following:

> A lot of hands-on training. People learn differently. People retain things differently. We talk a lot…IT has done training…working with our data makes it more helpful than just using test data. Understanding why we do something is important. There are a lot of little pieces which need to be understood. It impacts a lot of people.

> Whatever we can do for each other in order to ensure employees are learning. The hands-on experience then becomes valuable in order to learn how to handle the situations and have the knowledge on how to proceed, react, and solve a situation.

> There is so much to do and learn, a person really learns it by doing. Reading about it is one thing, but a person really starts to learn it by doing and interacting with the [customers].

Without these connections, KIBP tasks will not lead toward the development of new knowledge impacting organizational objectives. Knowledge can be developed through the enhanced perspective and reasoning skills of the employees established through their shared values and beliefs (Swan & Scarbrough, 2001; P. Thompson, Warhurst, & Callaghan, 2001).

Therefore, it is essential that employees handling KIBP tasks have the opportunities to develop their experiences related to KIBP in order to enhance their social competencies.

Social competencies in relation to organizational objectives have been the subject of previous research studies across multiple disciplines and have argued the need to improve these skill areas; however, the focus within these studies has been limited to general knowledge management and management strategies (Cicmil & Hodgson, 2006; Marcus & Anderson, 2006; Swan & Scarbrough, 2001; P. Thompson, et al., 2001). This research study expands the literature by arguing social competencies are related to knowledge creation specifically in the context of KIBP tasks and activities.

This study found that knowledge creation occurs in the context of KIBP through three main areas, KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning which are seen to be the primary catalysts for knowledge creation activities given their connection to social competency. However, three additional components, organizational controls, technological resources, and time, are seen to be the moderators of the engagement, perspective, and reasoning abilities. These moderators can either positively or negatively impact the relationship between these main categories. As noted by some participants:

> We have certain tasks which need to be completed in order to get the information we [the organization] needs to have. It comes down to completing the tasks in order to meet the organizational needs.

> We do have certain aspects which need to be covered…so we need to follow what is set by the [organization]. Any new knowledge which might be a result can impact how we proceed with a task or continue to the next step. In anything, it would likely impact how we handle that particular task the next time.

> Since there can be multiple steps in the process, it can impact the next part. So, the quicker the knowledge is provided back to the individuals…the next step can be handled better.

IT provides the training for the database system so as changes or updates occur, they will provide any information I need to have to work with the system.

PROPOSITIONS

As a result, it is argued there are six propositions which can be stated. As seen within Figure 6, KIBP Task Engagement, Perspective, and Reasoning requirements serve as the constructs with organizational controls, technological resources, and time serving as the additional constructs but also key modifiers. KIBP Social Competency is the dependent variable impacted by the levels of KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning supported by organizational controls, technological resources, and time. Through these relationships, KIBP Social Competency is positively impacted when individuals exhibit higher levels of KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning (modified through organizational controls, technological resources, and time). Therefore, KIBP Social Competency is reflective of how well individuals and organizations provide and gain opportunities for engagement, perspective, and reasoning skills to be developed and supported. As such, knowledge creation activities in the context of KIBP can be positively influenced.

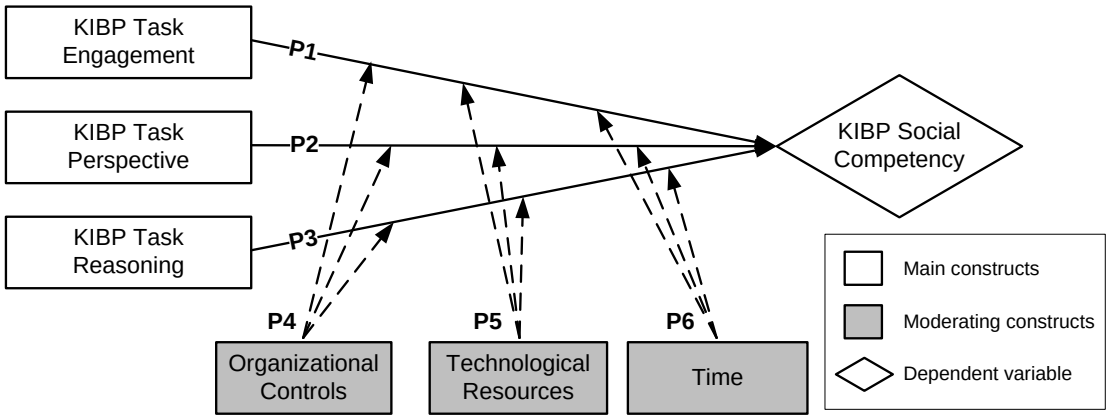

Figure 6. Propositions

KIBP Task Engagement (P1)

P1A: The greater the engagement requirements of a KIBP task, the more it has a positive impact on the knowledge creation activities.

P1B: The lower the engagement requirements of a KIBP task, the less it has a positive impact on the knowledge creation activities.

Engagement on the part of the employees was seen as one of the key components for knowledge creation in the context of KIBP within the organizations. These activities can occur through a variety of aspects, but need to be encouraged and supported by the organization. Many participants indicated the importance of having both regularly scheduled and even informal meetings to discuss KIBP tasks and processes. As noted by some participants in regards to their experiences with meetings:

> We need that opportunity to discuss the situation and how the staff handled the issue.

> Typically we will discuss any changes or updates which need to be shared with the staff. Changes in the system, regulations, or policies can happen which will impact how the staff works through their tasks. Regarding any of these aspects, we discuss actions taken by a staff member in handling a process. Perhaps it wasn't handled correctly or perhaps the step resulted in some new detail which needs to be shared.

As a result of these discussions, individuals come away with new knowledge of how tasks were handled but also build upon their own awareness of KIBP tasks initiated across other departments. In regards to knowledge creation, engagement opportunities provide the best opportunity to move knowledge from one person to another and therefore enabling the knowledge creation activities to occur. However, simply having these opportunities is not enough for these activities. Within these formal or informal sessions of engagement, it is also essential to understand what needs to be discussed such as organizational policies, data requirements, and task sequencing. Engagement requires the organization to provide a broader view of the available technologies (hardware and software) in order to improve engagement activities (Hochheiser & Lazar, 2007). To facilitate the development of new knowledge,

individuals need to also be aware of how KIBP tasks are connected and related to each. This then leads to the further development of the perspective of the employees. As stated by one participant:

> I believe knowledge was created through the various discussions we had within the group itself. Since we were able to learn more about each of our areas a bit more, we were able to take that information and learn from it.

Previous research studies also support Proposition 1. Gold et al. (2001) and Nonaka (1991; 2006) stated that engagement opportunities between individuals is a required component for employees to developed their own knowledge but also supports the building of collaboration. By encouraging and supporting active engagement, employees are able to share and exchange knowledge in a dynamic manner (Alavi & Leidner, 2001; D.-N. Chen, et al., 2010; J. Thompson & Cavaleri, 2010). As such, individuals are able to build on their knowledge and develop a common understanding or objective based on the integrative efforts of each person (Sitterle & Kessler, 2012). Therefore, higher levels of engagement provide the ability to exchange both tacit and explicit knowledge which is essential for the development of new knowledge.

KIBP Task Perspective (P2)

P2A: The greater the perspective requirements of a KIBP task, the more it has a positive impact on the knowledge creation activities.

P2B: The lower the perspective requirements of a KIBP task, the less it has a positive impact on the knowledge creation activities.

As employees build their interactions and engagement with others, the level of understanding of the KIBP tasks and knowledge also increases. Therefore, employees are able to more effectively discuss results achieved and understand the connections between KIBP tasks. Through this perspective, employees are more likely to develop new knowledge. One participant stated, “We were able to take that information and then create knowledge based on our new perspectives on each of the areas involved.” Another participant noted, “We discuss actions handed by other offices.” When asked why this occurs as part of engagement

opportunities, the participant indicated these discussions resulted in building an awareness of what is occurring in these offices. One participant reflected on the development of this awareness:

> As a group, we discussed who would be responsible for doing this activity, the time involved, the data entered, and what would happen next As we discussed these activities, we often discussed whether or not another office was doing the same thing or if the action was necessary anyway. We often found offices were duplicating the actions taken by another individual or office so we discovered some redundancies in the overall process. So, we then talked about whether or not an office needed to take a particular action or who should actually be responsible for the action.

This provides the mechanism for building a deeper perspective of the steps involved in the overall process, but also contributes to the knowledge base of the employee directly. Thus, the employee can use this new knowledge as they work through their own tasks and understand how their task is connected to others. "We get a better understanding of what is needed or what results through a task" and "staff members then have a better understanding of the connection between what they are doing and the next step in the process" were two statements provided through participants. It is through this understanding which allows an employee to build their perspective and make changes to their own tasks according to that new knowledge developed. One participant noted, "This perspective allowed for adjustments to be made and handle the task differently, but still within the organizational requirements."

Review of previous literature also supports the conditions associated with proposition 2. Brown et al. (1991) indicated the need for employees to develop a clear understanding of the work processes and the various complexities which impact those processes. Through engagements, individuals are able to develop new perspective by generating new knowledge based on the associations between previous knowledge (Knoll & Horton, 2011). Chen et al. (2010) also argues that new knowledge can be developed based on how well current knowledge is interpreted and understood. An increase in the overall perspective of an employee can lead toward a better understanding of the potential scenarios associated with a

KIBP task therefore also building on the perspective related to how scenarios can be handled (Knoll & Horton, 2011).

KIBP Task Reasoning (P3)

P3A: The greater the reasoning requirements of a KIBP task, the more it has a positive impact on the knowledge creation activities.

P3B: The lower the reasoning requirements of a KIBP task, the less it has a positive impact on the knowledge creation activities.

Knowledge creation is seen to occur more effectively through the reasoning ability of the employees involved in the KIBP task and processes. Reasoning becomes an aggregation of the characteristics found across the previous groupings. By increasing the levels of engagement and perspective of the employees, reasoning skills can also be enhanced to allow individuals to effectively form conclusions, judgments, and inferences bases on the results achieved through KIBP tasks. One executive stated, "It is through the experiences and interactions with others from which reasoning skills are developed." One participant noted that having the experiences is just the beginning; it is the asking of questions and building upon those experiences which becomes the next important step. As stated, "A person who is very knowledgeable begins to develop, in my mind, their intuition that begins to set the tone."

As such, building reasoning skills is seen as a challenge. A participant noted that an employee can go through hands-on training and gain experiences along with knowledge, but how does the employee handle that knowledge? At some point, the employee needs to start relying on their own intuition and build inferences between how the KIBP tasks are handled and what knowledge is needed. As a result, employees can begin to build their own arguments in regards to how KIBP tasks are handled and knowledge gained which then leads to more effective contributions to the organization. Through the supporting technological resources, individuals are further enhancing their ability for individual judgment and even analysis of knowledge based on complexity of KIBP tasks (Bughin, Chui, & Manyika, 2012). Employees have a deeper understanding and as such, are able to contribute to the knowledge creation activities impacting organizational objectives and strategies.

Proposition 3 is also supported by previous research studies which indicate the need for higher levels of reasoning skills as a key component for development of new knowledge.

Through reasoning, individuals learn how to ask relevant questions, work through complex situations, and infer knowledge from multiple sources (Nissen, 2005; Safi & Burrell, 2007). With an increase in engagement and perspectives on the part of the employees, higher levels of reasoning skills allow for critical-thinking and problem-solving capabilities to be developed which lead to employees providing higher value for the organization (Grant, 1996; Hussi, 2004).

Organizational Controls (P4)

P4A: The organizational controls provided through the organization positively moderate the relationship between KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning.

P4B: The organizational controls provided through the organization negatively moderate the relationship between KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning.

While there are multiple components associated with knowledge creation in the context of KIBP, the findings of the study indicate that data and organizational controls provide the foundation for KIBP task initiation. The controls are seen as being defined by the organization itself based on the policies and procedures established which dictate how knowledge is collected, accessed, and maintained (Gold, et al., 2001). As such, it is also feasible to have controls established by the organization also influenced through external regulations based on the industry. These controls impact the process of knowledge creation given the need for data within the KIBP tasks directly. As stated by Marjanovic et al. (2008), organizational controls provide descriptions of tasks roles, responsibilities, and resources, but also state the policies and procedures for task completion and handling. Given the importance of KIBP tasks within the organizations, several participants indicated that they "needed to follow the guidelines established." Through the conversations, individuals were aware of how their KIBP tasks impacted the department and the organization as a whole. In some situations, especially within the healthcare organization, patients could not receive the next level of care without previous tasks being completed. Another participant stated, "Any new knowledge which might be the result [of a task] can impact how we proceed to the next task."

As such, the need to have data which is complete and accurate is essential. KIBP tasks will result in poor information if these controls are not established and handled appropriately. KIBP tasks which utilize poor data or organizational controls will result in poor knowledge being developed or the continuation of the KIBP tasks. As mentioned, "Offices rely on previous tasks in order to complete daily or weekly reports." The data needs to be entered according to organizational procedures established which then triggers how other tasks are initiated or completed. One executive stated:

> We have certain tasks which need to be completed in order to get the information we need to have. Departments will also have their own set of objectives established…it comes down to completing the tasks to meet organizational needs.

As a result of KIBP completion and the controls established by the organization, documentation is developed and maintained. These documents serve as a method for sustaining the knowledge of the organization but also serve as a means for individuals to develop informal reference materials. One participant reflected, "Several of the staff members also have their own cheat sheets so they will often make the note or reference in their own files." In addition, another participant also noted the used of informal documents and stated, "Many of the employees will have their own books…things they need to recall. So, often they will have their own items because there is so much information going around."

The use of these documents then serve as a method for employees to build upon their understanding of the KIBP tasks and the knowledge required. However, reports and other documents are the direct result of KIBP task completion and can serve as an indicator for subsequent tasks to be initiated. One participant noted, "The reports from another office help me to know when my steps in the process can occur." However, other participants indicated their frustrations with a lack of communication regarding document creation. It was found that often reports were generated, but offices were not informed which led to KIBP tasks initiation being delayed. Therefore, the documentation within the KIBP tasks needs to be part of the awareness being developed by the employees. The knowledge of these documents across departments needs to be part of the engagement opportunities established by the organization. One participant noted, "We discovered that some offices were running similar reports"

following the conclusion of a KIBP task. Through discussions, it was determined these offices could utilize one reporting scheme to generate their set of reports instead of having redundant report structures in operation. Documents were seen as containing general information and knowledge required for KIBP tasks, but training materials were also viewed as being available. Any of the documents could then be "viewed by any member of the department and referenced at any time" according to one participant.

Technological Resources (P5)

P5A: The technological resources provided and supported within the organization positively moderate the relationship between KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning.

P5B: The technological resources provided and supported within the organization negatively moderate the relationship between KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning.

Viewed as a key component for KIBP task completion, technological resources directly supports the activities of KIBP and the subsequent knowledge creation activities. Technology provides the methods for sustaining the knowledge required for KIBP tasks (Overby, 2008); however, it then requires the organization to value the utilization of technology amongst its employees and within the controls established. Markus and Robey (1988) argued the relationship which exists between information technology and the organizational structures needs to be understood by organizations. Further, new developments in information technology in the ways of hardware and software have the ability to alter the methods and mechanisms supported by IT dynamically. Several resources were noted by the participants; however, it was the utilization of information systems, databases, and online portals which received a lot of attention. As mentioned by one participant, "[the information system] is what contains the information needed for the task." As noted by another participant, "We rely on the information within the system to see what is currently happening or to see how something was handled." Online portals provided participants a mechanism from which documents could be stored, shared, and accessed. As such, the organization needs to be aware of how their technologies impact the KIBP tasks. Many participants indicated a connection to their organizational information technology offices and rely on their service and

support on a daily basis. Employees utilizing technologies (such as collaboration and communication systems) within their KIBP tasks have the opportunity to decrease the overall time involved with the task (Bughin, et al., 2012).

Through their technologies, individuals have been able to build their relationships and interconnections with each other and increased their ability to collaborate across time and spatial dependencies (Cabrera, Collins, & Salgado, 2006). Although some participants had the knowledge to use database structures and query building analyses, many individuals indicated the challenge "knowing what data is stored and what database fields are used." One participant noted, "Using the systems can be easy if you know what you are looking for, but it can be confusing if you don't know the specific field names for the data." Individuals often mentioned that their technology offices provided support, but it was also essential for them to continue offering training opportunities beyond a specific time when a concern is raised. The use of these technological resources provides a mechanism from which knowledge is handled and therefore lends itself directly to supporting the knowledge creation activities associated with KIBP tasks. Another participant noted, "We have a better sense of what data is being stored and what would be available to us." In addition, "our information technology office showed what we could with the information system and how to move documents back and forth." By improving the relationship between information technology departments and the other departments, a more effective working environment can be developed thus increasing the understanding of how technological resources can support KIBP tasks (Nelson & Cooprider, 1996).

With technology being made available and supported, employees are able to contribute to the general collection of knowledge but also then lend their own voice to knowledge creation activities. Technologies provide the support for communication efforts when face-to-face opportunities do not exist or is limited due to time or distance and leads to an increase in shared understandings and common objectives (Chiravuri, Nazareth, & Ramamurthy, 2011). Technological resources are then viewed as a moderator which allows employees to engage, build perspective, and develop reasoning skills across extended periods of time. Alavi and Leidner (2001) argued it is information technologies which enable employees to have a larger set of knowledge and as this increases, new knowledge being developed can also increase. As

a key component, technological resources need to be monitored to authenticate the activities associated with the KIBP tasks and overall process to ensure its benefit (Overby, 2008).

Time (P6)

P6A: The more time involved with a KIBP task will negatively impact the relationship between KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning.

P6B: The less time involved with a KIBP task will positively impact the relationship between KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning.

Knowledge creation and KIBP task completion is seen to be dependent on the length of time associated with each KIBP task. As the time to complete a KIBP task is extended, knowledge creation will delayed. Therefore, individuals need to be aware of the time involved for KIBP task completion and its impact on subsequent tasks. Organizations need to be aware of the timings which constrain their KIBP tasks in order to be proactive in the way time can be managed (Hochheiser & Lazar, 2007). One participant stated "knowledge needs to be moved quickly." In addition, another participant indicated "the quicker knowledge is provided back to individuals or stored in the information system; the next step can be handled better and faster." It was also noted that the KIBP task complexity can also vary and the findings suggest that the more complex KIBP tasks also require more time for completion. As noted by one participant, "If the task required further information or data, we may have to provide responses at later time" This slowed the ability of the employees to complete tasks quickly, but employees also recognized the need for more information and knowledge to be part of the KIBP task before continuing. Although the ability to provide a faster response time for KIBP tasks may be constrained due to various circumstances, an awareness of this aspect provides the organization an opportunity to consider their current practices for knowledge management in order to reduce the time periods between tasks (Hochheiser & Lazar, 2007). Time also impacts the level of engagement, perspective, and reasoning abilities of the individuals involved in the KIBP tasks thus influencing the ability to develop new knowledge. One participant reflected:

> We can't proceed with a task until a previous one is completed so we can't begin working with that information yet. We can't get a sense of what's needed or if new knowledge can be developed.

Another participant stated, "If the tasks get delayed, then that also slows down the opportunity for new knowledge to be developed." Given the characteristic of KIBP indicating the short half-life of knowledge, the need for knowledge to be developed and handled quickly is essential due to the dynamic nature of the organizational environments (Nissen, 2005).

Summary of Propositions

As stated in the previous sections, the propositions are developed based on the observed environmental conditions within the organizations and as a result of the analysis of the findings. The propositions along with their corresponding categories, concepts, and supporting prior research studies are summarized in Table 10.

Table 10. Summary of propositions

Proposition	Category	Concepts	Supporting Research
P1 (A, B)	KIBP Task Engagement	Build on knowledge and develop a common understanding or objective based on the integrative efforts.	Gold et al. (2001); Nonaka (1991); Nonaka et al. (2006); Sitterle et al. (2012); Thompson et al. (2010)
P2 (A, B)	KIBP Task Perspective	Develop a clear perspective of the work processes and the various complexities which impact those processes.	Brown et al. (1991); Chen et al. (2010); Knoll et al. (2011)
P3 (A, B)	KIBP Task Reasoning	Learn how to ask relevant questions, work through complex situations, and infer knowledge from multiple sources.	Bughin et al. (2012); Grant (1996); Nissen (2005); Safi et al. (2007)
P4 (A, B)	Organizational Controls	Descriptions of tasks roles, responsibilities, and resources; stating the policies and procedures for task completion and handling.	Gold et al. (2001); Lee & Choi (2003); Marjanovic et al. (2011)
P5 (A, B)	Technological Resources	Provides the methods and mechanisms for sustaining the knowledge required.	Alavi & Leidner (2001); Chiravuri et al. (2011); Nelson & Cooprider (1996); Overby (2008)
P6 (A, B)	Time	Need for knowledge to be developed and handled quickly is essential due to the dynamic nature of the organizational environments	Hochheiser & Lazar (2007); Nissen (2005)

THEORETICAL FRAMEWORK

Through the described categories and propositions, a theoretical framework can be developed. As discussed in the previous sections, the relationships between the categories were determined based on the analysis and interpretations. The theory proposes that knowledge creation in the context of knowledge-intensive business processes occurs through higher levels of KIBP Task Engagement, KIBP Task Perspectives, and KIBP Task Reasoning skills (i.e. KIBP social competencies) exhibited by employees within the organizations. The theoretical framework is represented in Figure 7. These three variables are then connected to

each other through the organizational controls. As depicted by the framework, the interactions between the areas are supported by the technological resources provided by the organization and utilized by individuals. To support the increase in engagement, perspectives, and ultimately reasoning skills of employees, the level of technological resources and support also needs to increase.

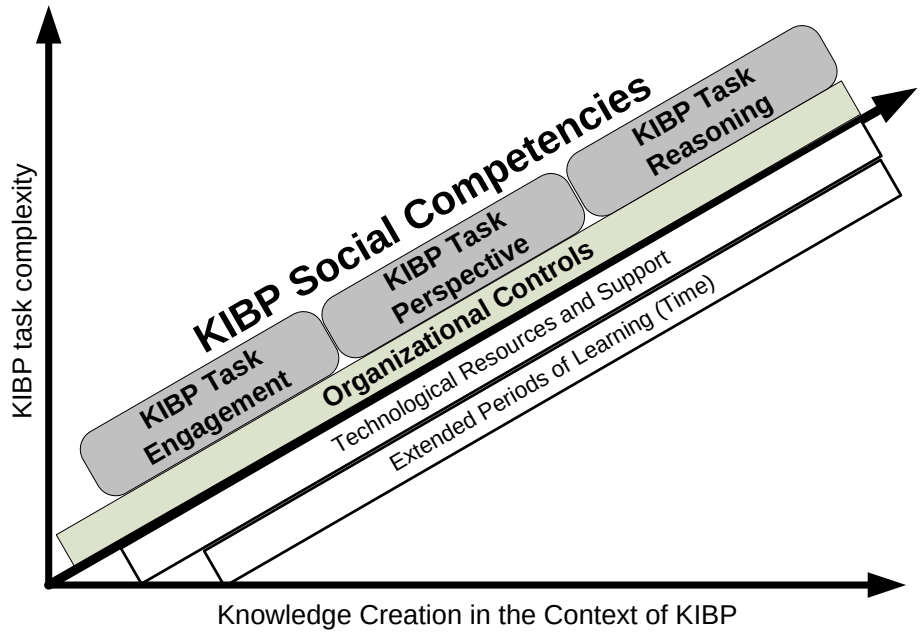

Figure 7. Theoretical model

Additionally, KIBP task complexity also impacts the ability of employees to develop new knowledge. If task complexity is perceived to be low, knowledge creation can perhaps still occur through engagement opportunities; however, the value of the knowledge developed may not be perceived to have high value. If task complexity is perceived to be high, which also requires a higher level of KIBP social competency, then knowledge developed may have a perceived higher value. As task complexity increases, the time involved for task completion and knowledge creation also increase again requiring a higher level of KIBP social competency.

EVALUATION OF THEORY

Throughout the research study, data obtained through the interviews were directly related to research questions and evaluated for evidence and experiences supporting these

questions. Corbin and Strauss (1990) identified four conditions which evaluate the theory's application to the identified phenomenon: fit, understanding, generality, and control.

First, the fitness of the theory relates to how the theory refers to the environment being studied to ensure the data is obtained through various sources (Corbin & Strauss, 1990). As a result of this study, the theory was developed through interviews with participants within three organizations demonstrating KIBP. The participants were directly related to the KIBP tasks within their departments or organizations. Although not done with all participants, six individuals were utilized for follow-up conversations where responses were reviewed and additional data was obtained.

Second, understanding refers to the theory representing a comprehensive review to not only the participants in the study but to the practitioners in the industries (Corbin & Strauss, 1990). Within the interviews, the terms of "knowledge creation" and "knowledge-intensive business processes" were often not known; however, the overall concept of each were understood by the participants. It was determined that individuals participated in many of the activities outlined within the theory, but did not directly relate their own experiences to the aspects of the theory itself. They realized these aspects and supporting structures were being experienced and several expressed their realization that their activities were seen as being part of a bigger process. The initial proposed theory was shared with a few of the participants and those who examined it were able to understand the concepts. These aspects were also presented to experts in the Information Systems discipline through available conferences emphasizing business processes.

Third, theory becomes generalized when it sufficiently provides application to contexts outside of the study itself (Corbin & Strauss, 1990). The theory developed was based on an interpretation of multiple environments across different industries. Given the utilization of multiple organizations, the generalization of the theory develops through the aggregation of the responses from participants across these organizations.

Fourth, the theory is required to demonstrate control in relation to how data is systematically obtained from real-world environments within the context of the phenomenon (Corbin & Strauss, 1990). The theory was developed based on the concepts obtained through participants within their environments related to the phenomenon being studied. Previous

research utilizing the grounded theory methodology also support the stages utilized within this research study and were consistent with the grounded theory approach.

Overall, the four criteria defined by Corbin and Strauss (1990) have been met within the research study. The theory and its corresponding categories were developed from the data and accurately describe knowledge creation in the context of knowledge-intensive business processes. In addition to the above four conditions, Corbin and Strauss (1990) suggest seven criterion for judging the research process utilized. These criterion and responses are provided in the next section.

Criterion #1: How was the original sample selected?

As described in a previous section, the participants were selected from employees within three organizations and industries. These participants were directly associated with KIBP tasks within their designated areas. In addition, participants were also selected based on their employment classification in order to obtain perspectives from various levels of management or staffing areas. Supervisors within the organizations also provided guidance as to which participants would be available during the arranged visits.

Criterion 2: What major categories emerged?

Based on the interviews conducted, transcriptions were created which allowed for coding to occur to examine relationships and connections. From the initial coding and evaluation, several categories were identified including: organizational controls, technological resources, and time, which support the categories of KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning. In combination, the six categories were seen contributing to the core category of KIBP social competencies.

Criterion 3: What were some of the events, incidents, actions, and so on that indicated some of these major categories?

The major categories are interconnected and dynamic within the environments. It was evident that KIBP tasks in some cases were determined based on organizational controls and often resulted in documentation or data being generated or maintained. Although knowledge creation can occur through these categories, enhancing the levels of KIBP Task Engagement leads to a better KIBP Task Perspective which then develops the KIBP Task Reasoning skills within the employee. Thus, an increase in KIBP social competencies of the employee can

occur. Knowledge creation in the context of KIBP was seen to be directly supported by technological resources and is influenced by the time involved in working KIBP tasks.

Criterion 4: On the basis of what categories did theoretical sampling proceed?

The initial codes identified areas which demonstrated similarities or differences. The research question associated with understanding knowledge creation in the context of KIBP drove the process of data collection and analysis. As the interpretation of the data continued, some follow-up discussions with selected members of the organizations occurred to verify findings and to conduct additional data collection.

Criterion 5: What were some of the propositions pertaining to relations among categories?

The study was initiated to develop an understanding of knowledge creation in the context of KIBP. As data collection and analysis continued, relationships between codes and ultimately the categories were identified. The propositions were developed as a result of the findings and directly relate to the proposed theoretical model with attention given to the categories of KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning. By increasing or developing the levels of these categories, knowledge creation will be positively impacted in the context of KIBP. However, it is also noted that increasing these areas will also require an increase in the technological resources and support for these areas.

Criterion 6: Were there instances when propositions did not hold up against what was actually seen?

The categories were defined by the responses obtained through the participants; however, the area of *time* was not originally considered. In an attempt to understand the development of the other categories, it was necessary to include time as an influence on knowledge creation. Often, participants reflected on their "years of experiences" and commented on how it "takes time" to develop the skills and knowledge required to understand the KIBP tasks. These considerations impact the core category given the need for extended time periods to develop the skills viewed to be essential for social competency. Through the interviews conducted, it was evident that the main categories influenced or supported knowledge creation in the context of KIBP; however, the category of KIBP Task Reasoning developed through the emergence of KIBP Task Engagement and KIBP Task Perspective categories. Although these two areas are essential, there was another level which seemed to be required. The category of KIBP Task Reasoning emerged as a result to indicate these skills

(inference, judgment, and forming conclusions) develops through the levels of KIBP Task Engagement and KIBP Task Perspective demonstrated by the employees.

Criterion 7: How and why was the core category selected?

As interviews were conducted, the emerging theme expressed by the participants was related to the core category. Through the data collection, analysis, and perspective of the relationships between codes, the axial categories which emerged indicated a concept of *KIBP social competencies* which was deemed essential for knowledge creation to occur in the context of KIBP. This social competency cannot always refer to physical traits, but are often seen through the ability of the employees to handle their own beliefs, goals, and overall perceptions of the KIBP tasks and the organization.

CHAPTER 6

CONCLUSIONS

INTRODUCTION

The purpose of the research study was to build an understanding of knowledge creation in the context of knowledge-intensive business processes. As mentioned earlier, KIBP exhibits characteristics where: (1) involves tasks which often require employee innovation or creativity, (2) involves tasks which require extended time for learning, (3) involves additional complex tasks dependent on each, and (4) involves tasks which are not often pre-defined. Through the analysis of the responses, the findings suggest that knowledge creation occurs as a result of higher levels of KIBP social competency on the part of the employees handling the KIBP tasks. In addition, as perceived KIBP task complexity increases, the ability to develop new knowledge is directly supported by the social competency of the employees. As the length of time to handle the task increases, more attention to social competencies are also required impacting the opportunity for knowledge creation to occur.

DISCUSSION

The intent of the research study was to utilize a grounded theory approach to examine the phenomenon described in the previous sections. Analysis resulted in a theoretical model which proposes that knowledge creation occurs when an employee exhibits higher levels of KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning skills (i.e. KIBP social competencies). The research questions being addressed in this study were as follows:

1. How does knowledge creation (as seen as a KM initiative) occur in the context of knowledge-intensive business processes?
2. What are the antecedents and mechanisms (such as technological resources) which lead to, influence, and support knowledge creation in the context of KIBP?

The main question driving this study explored knowledge creation in the context of KIBP. Information obtained through the interviews provided the insight into the KIBP tasks within the three organizations and their view of their own experiences in relation to

knowledge creation. Although three organizations across different industries were examined, each participant provided similar experiences and perceptions. Common responses revealed recurrent themes surrounding the need for more hands-on experiences, technologies, and socialization opportunities. First, employees conveyed the need for both new and current employees to utilize more personalized training experiences in order to develop the knowledge required for the KIBP tasks. One participant reflected on his/her training experiences and stated, "A lot of hands-on [experiences]….The ability to go to the classroom if needed. We've given people different opportunities…if we know someone is struggling…we might recommend that they do some additional one-on-one." In addition, one other participant noted, "I would say that the on-the-job training actually is an easy six months and then you build and you learn and you grow your knowledge."

As noted by the participants, these personalized, hands-on experiences provided the means to learn the task and developed the knowledge required to handle and complete the tasks. Second, technologies such as information systems, online portals, and Web-based reporting services, provided the ability to sustain knowledge required for the KIBP tasks. Two participants stated:

> Most of us keep informal notes or cheat sheets in order to remember something. We also use our portal site to maintain notes for the staff. This is accessed by members and it contains various documents on policies, procedures, etc.

> We rely on the database system and our online reporting application to obtain data. We needed a better sense of what data was being stored and what would be available to us. IT showed what we could do with it.

In addition, employees found the use of technologies as an important aspect when developing new knowledge and providing that knowledge back to the organization. Third, socialization opportunities served an important role given the need to increase interactions between individuals. Again, technologies serve this socialization aspect; but often employees utilized face-to-face or personal interactions to discuss KIBP tasks and its knowledge. Two executives reflected on these interactions between staff members:

> I like the idea of having the staff meet on a regular basis…. Even the informal opportunities provide a chance for the staff to discuss new ideas. We often find ourselves working in a busy environment and perhaps we don't feel there is time for that type of thing, but I think encouraging the informal meetings is good….These interactions can be beneficial for all members.

> We do have regularly scheduled meetings at least once a month as a staff. But, we do sometimes have quick meetings which aren't scheduled. There are times when someone will encounter something different so we may have a quick session to discuss it as a group.

The results of the study answer the research question through the analysis of the responses provided by the participants. The research study emphasizes the need for organizations to promote and encourage the engagement and development of perspectives of employees involved in KIBP tasks which therefore leads to the development of higher reasoning skills required. As such, knowledge creation occurs in the context of KIBP as a result of employees developing their KIBP social competencies.

The second research question addresses the antecedents and mechanisms which support the knowledge creation activities in the context of KIBP. The theory developed as a result of this study proposes both indirect and direct influences supporting this phenomenon. Participants discussed their interactions with each other amongst a dynamic environment that requires faster response times, learning opportunities, and an environmental culture supporting their requirements. Within the organizations, participants noted that it was essential that KIBP tasks get handled quickly as the following quotations illustrate:

> There is a lot of information….We do try to get information out there as quickly as we can because it is a pretty dynamic environment.

> [This] is a very dynamic environment…and there is a great need to make sure all of that information is online to share with others regardless of where they are.

> This is an ever changing place. I mean you are told one thing one week, but the next week it could be different so you have to be very open minded to work in the area. You can't be set in your ways because something could change the very next day so you need to be able to handle the changes and be adaptable.

Slow response times in task sequences resulted in KIBP task completion being delayed but also then slowed the process of developing new knowledge. Due to this aspect, participants utilized multiple methods for communication including phone calls, E-mail, teleconferencing, and printed documents; however, when a faster response was perceived to be needed, personal communications such as face-to-face or phone calls were seen to be the best approach. Information and database systems were often utilized in parallel with communication methods and served as a direct method for storing and accessing knowledge at a later time. Some participants echoed on the use of these methods for communication and noted:

> We do use E-mail quite a bit to send information to either individuals or to the group. Phone calls provided more personal conversation if needed. But I think it was the face-to-face meetings which provided the best opportunity for us.

> We do use a global E-mail message throughout the organization. Sometimes, we will have conference calls, if it is an important issue which needs a little more discussion.

However, the time required for task completion or development of new knowledge is also related to the perceived complexity of the task itself. Another participant stated the impact of increasing the time required for a task and reflected, "[The task] may sound like it will be routine, but when you are asking questions and working with departments and getting more information…, then it can be more complex."

While participants did express their appreciation for training opportunities currently offered by their organizations, many participants believed the complexity of KIBP tasks also drives the need for ongoing internal and external learning opportunities. Two participants noted their thoughts on these training opportunities:

> Training meetings lead to collaboratively together sitting down and ask what we need to do and then ask how do we fix it…and come together on how to clean up the problem.

> Training is always updated. Employees will go through additional training sessions at least once year….We're all open and willing to share. No one wants to keep information from someone.

These opportunities which go beyond the routine training provided, allow for a deeper understanding of how the KIBP tasks are connected to areas beyond their organizational boundaries. Individuals reflected that these opportunities for gaining knowledge were seen to be important but often not viewed as realistic given the time constraints within their personal and organizational structures. As such, the environmental culture demonstrated across the organization influences the perception of how KIBP tasks can be handled, development of the skills and knowledge needed to work with KIBP tasks, and the overall support required for KIBP tasks and knowledge development. This sentiment is echoed through the reflection of two participants:

> That is something that is part of our culture as well. They know that when we hire them and we have that discussion. I encourage them to explore possibilities. I'm also encouraging them to get the outside education through the training which is available.

> If we have a difficult situation…that needs some help, we always ask each other…is there anything else we can do? As a team, we can then discuss ideas and thoughts about how to continue….We do communicate well with each and share our thoughts and ideas.

Based on the perspectives obtained through the participants in the organizations, key conditions and mechanisms impacting KIBP task and knowledge creation can be outlined (as shown in Table 11.

Table 11. Conditions and mechanisms

Conditions	Mechanisms
▪ Recognition of need for ongoing and various forms of training ▪ Allow active discussions and participation ▪ Inclusion of different scenarios to facilitate critical thinking or problem solving skills ▪ Provide collaborative opportunities ▪ Providing structure outlining procedures including technologies to ensure complete, clear, correct, and timely interchanges ▪ Recognition of task dependencies ▪ Recognition of cultural influences ▪ Align information technology and business strategies ▪ Maintain standardization	▪ Personalization of training ▪ Hands-on experiences ▪ Webinars ▪ Conferences ▪ Written or explicit forms ▪ Personal documents ▪ Web-based technology ▪ Manuals ▪ Surveys ▪ Feedback opportunities ▪ Policies ▪ Objective statements ▪ Data requirements ▪ External influences

As suggested by previous studies and literature (Alavi & Leidner, 2001; Freeze & Robles-Flores, 2005; Kalpic & Bernus, 2006), many factors can be seen as influencing knowledge management and knowledge creation activities. To further contribute to these previous studies and argued within the context of this research, the above conditions and mechanisms lend themselves toward the enhancement of the KIBP social competencies (KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning) and the knowledge creation activities associated with and as a result of KIBP.

IMPLICATIONS

This study and proposed theoretical model represent an opportunity for developing an organization's ability to handle knowledge creation in the context of KIBP. The overall aspect for consideration by practitioners is the development of KIBP social competencies (KIBP Task Engagement, KIBP Task Perspectives, and KIBP Task Reasoning skills) among its employees.

First, organizations need to enhance the level of KIBP Task Engagement of employees through socialization activities and communication opportunities to increase knowledge creation opportunities. By supporting and encouraging both formal and informal sessions, individuals will have an increased opportunity to interact with other. Although personal

activities are important, engagement opportunities can also exist through technologies. This is supported through technologies emphasizing multiple forms of communication including phone, E-mail, and collaborative systems allowing individuals to communicate across organizational boundaries. Second, organizations can support the development of employee KIBP Task Perspectives and understanding of KIBP tasks by providing ongoing training through either internal or external opportunities. Personalized training and hands-on experiences are seen as key methods for building a higher level of understanding. In addition, employees should be given opportunities to learn more about other departmental KIBP responsibilities as part of the training. This will allow employees to develop an understanding of how their own KIBP tasks connect or relate to others across the organization. Third, as the employee KIBP Task Perspective is developed, the employee will also increase their KIBP Task Reasoning skills and develop the ability to form conclusions, judgments, and inferences related to the KIBP tasks and the knowledge.

As these abilities are improved, employees are able to contribute to knowledge creation in a more effective manner and directly support organizational objectives. This can be accomplished through:

1. Opportunities to reflect on knowledge used by the organization and understand why such knowledge is used,
2. Provide opportunities to examine trends and relationships associated with KIBP tasks and to discuss why KIBP tasks occur within the organization,
3. Development of arguments related to knowledge being developed and discuss why or how knowledge was created, and
4. Provide opportunities for problem-solving activities related to KIBP tasks.

Each of these areas will be directly supported by the level of technological resources provided by the organization. Therefore, the organization needs to build or enhance its commitment toward utilization of information systems, various communication methods, collaboration systems, and provide training to develop technical skills and knowledge toward the utilization of these technologies.

The relationship between KM, KIBP, and information technologies (IT) can be viewed as a continuously revolving aspect of the organization (as seen in Figure 8). IT is perceived to include all technological resources (including but not limited to databases, information

systems, and online portals) within the organization which then leads to the implementation of KM activities which influences the knowledge-intensive business processes given its need for high levels of knowledge. In turn, the results of KIBP impact the requirements and expectations provided through information technologies. Each of these components can then impact the KIBP Social Competencies (KIBP Task Engagement, KIBP Perspective, and KIBP Task Reasoning). As knowledge workers develop these skill sets, new ideas and information can influence these segments of the organizations.

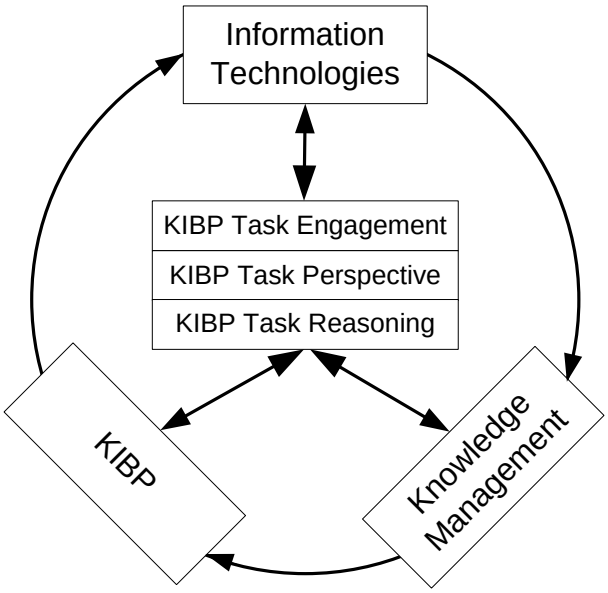

Figure 8. Overview of KM relationships

The information technologies and KM systems utilized affect the nature of how individuals gain knowledge and further develop their responses to and within KIBP. By building their understanding, individuals can learn the knowledge required to perform KIBP more appropriately. Therefore, it is essential for organizations to provide the support and structures available through information technologies in order to enhance the abilities of the knowledge workers associated with KIBP.

The implications for organizations indicate the need to interconnect the development of the knowledge workers and KM activities. The overall development of the KIBP social competencies therefore can be supported and enhanced through the use of information technologies. The use of technologies provides a level of mechanisms which can be used to connect the learning opportunities, KM activities (such as knowledge creation), and KIBP activities. As seen in Table 12, examples of the various technological resources can be viewed

as being beneficial for organizations to provide the structure and support required to develop the KIBP Social Competencies of the knowledge workers. Although examples are provided within each category, it is recognized that certain IT applications can be used within multiple categories.

Table 12. Information technologies

KIBP Social Competencies	IT-Based Resources	Purpose
KIBP Task Engagement	Internet; meetings; teleconferencing; web-based training; Electronic mail; communities of practice	▪ Infrastructure for communication and data exchange ▪ File transfer ▪ Knowledge storage and retrieval ▪ Experiences and general knowledge ▪ Discussions of relevant issues
KIBP Task Perspective	Content Management System; Workflow Management Systems; Video-conferencing	▪ Storing, retrieval, and updating aggregate and relevant knowledge and documents in one location ▪ Defining business processes and providing collaborative analysis and training opportunities. ▪ Collaborative discussions
KIBP Task Reasoning	Expert Systems; Groupware/Discussion Systems; Simulations; Decision Support Systems; Case-based Reasoning	▪ Capturing, storage of expert knowledge ▪ Communication channels ▪ Representation of process behaviors and characteristics ▪ Decision support ▪ Historical solutions to problems

Within the organizational structures, individuals play an active role in the design, development, and utilization of KM systems and therefore, it is important for individuals and organizations to understand the human element behind knowledge creation activities in the context of KIBP to encourage and supports the use of these technologies. By understanding the characteristics exhibited by individuals within the KIBP Social Competencies, IT structures can be designed or modified to support these characteristics of KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning as described in previous sections. Technologies provide mechanisms through which knowledge can be obtained and

shared; however, as noted by several participants, face-to-face communication and contact was often preferred over the use the information technologies. It will be important for organizational cultures to establish, promote, and encourage a level of trust and confidence between individuals and groups when utilizing technologies. It is argued that new methods of communications and collaboration through the use of information technologies enable more reliable and consistent opportunities for geographically centralized and dispersed knowledge workers (Roberts, 2000). Information technologies will play an important role in KIBP and knowledge creation activities; therefore, the use of such technologies needs to be viewed as a strategic opportunity for organizations to enhance these processes. As such, additional studies can be suggested through which these aspects can be evaluated and assessed in relation to KIBP activities.

LIMITATIONS

The study has certain limitations which need to be discussed. First, there are limitations in relation to the design of the study. Individuals were selected who were directly related to KIBP tasks within organizations; however, there were participants who were not able to contribute due to their own time commitments or duties being performed within the organization. Therefore, data was not obtained from these individuals and limited the data collection processes and the number of participants.

Another limitation is also related to the participants involved with the study. As a consideration to the organizations and at the request of the supervisors, interviews were condensed as much as possible in order to not disrupt work activities in the departments. Although permission was granted to interview individuals, the request had been made to keep the interviews as succinct as possible to allow employees to return to their duties without interrupting the office environment.

A third limitation is related to the knowledge base of the participants in relation to "knowledge creation" and "knowledge-intensive business processes" directly. Attempts were made to provide a working definition of these terms for the benefit of the participants, but it was evident many individuals at the lower management or staffing areas did not relate their own experiences to these terms. Questions were developed to try and utilize alternative terminology without influencing potential responses.

A final limitation is associated with the KIBP tasks studied. Within the context of this research, only a few KIBP and tasks were examined through the interviews. Since KIBP exist throughout an organization, additional research expanding on the types of KIBP would be beneficial in order to validate the theory.

CONTRIBUTION

The research study provided an understanding of knowledge creation activities in the context of knowledge-intensive business processes across organizations and contributed to both the theoretical and practitioner perspectives. By utilizing the grounded theory approach, the study included systematic data collection, analysis, and interpretation with the intent to formulate a theory designed to illustrate alignment between knowledge creation and KIBP. The underlying objectives of the theoretical perspective through the developed theory provided information regarding the understanding of the mechanisms and conditions by which knowledge creation occurs in KIBP and organizational factors which play a role in influencing knowledge creation in KIBP. Through these theoretical perspectives, the importance of aligning knowledge creation activities to KIBP was viewed as an important aspect for knowledge management activities and business process management across an organization.

Through the results of the grounded theory approach, the study also lends itself toward practitioner perspectives on knowledge creation and KIBP. By exploring and analyzing the organizational data and factors, the theory provided a more prescriptive guide for organizations seeking practical applications to enhance and optimize their current activities. The proposed theory is also general enough to be understandable and applied across varying environments. In essence, the prescriptive guidance included information regarding how organizations can utilize the organizational factors identified as having influence in order to support their current and future knowledge creation activities in knowledge-intensive processes. Further, the study contributed to current research within the Information Systems discipline through the understanding of how technological resources lend themselves to the implementation of knowledge-intensive business processes.

FUTURE RESEARCH

This grounded theory research study provided a framework for future research associated with knowledge creation in the context of KIBP. These areas may include additional studies across other industry types to enhance the generalization of the proposed theory. Additional studies related to the connections between the categories with emphasis on the categories, KIBP Task Engagement, KIBP Task Perspectives, and KIBP Task Reasoning, would be beneficial to organizations to further align their KIBP social competencies with organizational strategies.

Additional studies related to the differences between the organizational types would provide an expanded perspective on knowledge creation. Through the analysis, each organization handles their KIBP tasks slightly differently based on their organizational controls and each work through knowledge creation activities. A more detailed examination of the different types of organization may yield specific differences which can then be applied to the theoretical and practitioner perspectives.

A third area for future research is associated with the technological resources and support structures. Specifically, studies related to how can information technology enhance KIBP task completions and emphasize what areas within these support areas can be improved in order to foster information technology's overall role in the context of KIBP.

CONCLUSION

The study expanded on the existing literature regarding knowledge creation by examining how it occurs within the context of KIBP. As knowledge is directly connected to individuals within the organization, the knowledge needs to be an essential part of any knowledge-intensive business process to effectively impact organizational efforts. However, it can be a challenge to identify one specific factor which influences how knowledge occurs within KIBP (Freeze & Robles-Flores, 2005). As noted by Kalpic and Bernus (2006), knowledge is created through organizational data and manipulated through business processes in order to develop information which is then interpreted and used by the organization. This connection between knowledge and business processes stresses the importance of analyzing an organization's current knowledge-intensive business processes to understand how they utilize knowledge. These tasks within organizations are dependent on the structures and individuals provided and supported by the organization. By understanding these mechanisms

and conditions, organizations will be better prepared to support and enhance their activities related to knowledge-intensive business processes as they continue to increase their reliance on this category of business processes.

A theoretical framework has been proposed to indicate the interconnections between the main variables (KIBP Task Engagement, KIBP Task Perspective, and KIBP Task Reasoning) and their moderators (organizational controls, technological resources, and time). The framework clarifies how knowledge creation can occur in the context of KIBP and provides a set of areas for consideration within future research agendas. From a practitioner viewpoint, the relationships defined indicate a need to provide employees working within KIBP opportunities to enhance their engagement and interactions with other in order to develop a better perspective leading toward improved reasoning skills. As such, knowledge being developed can better align with organizational objectives and have a higher perceived value for the organization.

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APPENDIX A: INTERVIEW QUESTIONS

Initial Questions

What is your present position in the company?

What are your major responsibilities?

What has prepared you for this job?

- Education background?
- Prior positions?

Tell me about what this organization is like from your perspective?

What is important to this company?

- How do you know this is important to the company?
- How were these beliefs shared with you?

If I were a new employee, how are these important items shared?

Intermediate Questions

Note: These questions reflect one particular knowledge-intensive process in the organization; however, it is expected the questioning will involve multiple knowledge-intensive processes. The questions will be repeated to cover additional processes as needed.

Tell me how this process [_____] works in the organization?

- Does this process contain multiple tasks needed for completion?
  - Are any of these other tasks automated or predefined for you?
- What is needed before your task can be started or continued?
- What happens when your task or process is completed?
- How is knowledge developed upon task completion?

How (or where) did you obtain the knowledge (or resources) needed for this process?

- Was this an appropriate method for obtaining the knowledge (or resource)?
  - Why or why not?
- How do you utilize information systems or other technologies to gain the knowledge?
  - How are these technologies used to develop new knowledge?

How are organizational meetings used to help you gain more knowledge (or resources) toward the completion of the process?

How did these discussions occur?

What were primarily discussed at these meetings?

Do you utilize other organizational materials to gain further knowledge (or resources) to be used toward the process?

How is your task defined for you?

How do these materials fit into your task?

What sort of opportunities does the organization provide for you to gain (or obtain) resources to be used toward the process?

On-the-job training?

Learning through observation (individual or group)?

Retreats or conferences?

Prototypes or simulations?

As a result of these activities, how do you think new knowledge was developed?

Are there any changes you would recommend in obtaining the knowledge (or resource)?

What do you feel represents the best method for obtaining knowledge or resources?

If needed, how is communication handled between individuals or teams?

As a result of the process, is new knowledge created for the organization or individuals?

How do you think new knowledge is developed?

When does this knowledge get created?

Shortly after the process or does an extended period of time pass?

How do individuals learn of the new knowledge?

<u>Ending Questions</u>

What have you learned from these processes as they've been implemented?

How do you share your experiences with others in regard to these processes?

How do you teach others about how to complete these processes?

What do you value most from the resources used to complete the processes?

Is there anything else I should know about these processes in order to understand them better?

Is there anything you would like to ask me?

APPENDIX B: LETTER OF CONSENT

Dear Participant:

I, Todd A. Little, am conducting a dissertation research project entitled "Understanding Knowledge Creation in the Context of Knowledge-Intensive Business Processes" as partial fulfillment of the requirements for the degree of Doctor of Science in Information Systems at Dakota State University. The purpose of the study is to examine the role of knowledge creation activities within the context of knowledge intensive business processes.

You are invited to participate in the study by allowing me to conduct an interview with you to discuss your perspectives of your organization's key business processes. I realize that your time is valuable and will make every attempt to keep the interview as brief and concise as possible. It will take you approximately one hour of your time. Your participation in this project is voluntary. You may withdraw from the study at any time without consequence.

One identified risk to you for participating in this study is related to your perspectives of your organization's current processes. However, if you deem a question to be of a sensitive nature or would violate any confidentiality, you will have the option of not answering the question.

As a participant within the study, there are no direct benefits. You will not be compensated for your time or for your responses to the questions. Your participation in the study is voluntary.

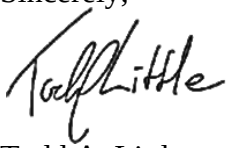
Your responses are strictly confidential. When the data and analysis are presented, you will not be linked to the data by your name, title or any other identifying item. Names will be replaced by a numeric code in order to establish a differentiation between participants and organizations.

Please keep a copy of this letter for your information. The analysis of your response will be used within the dissertation project; however, it is also possible the analysis will be presented within either peer-reviewed journals or conferences at a later date. By providing consent, you agree to participate in the study and to allow the analysis to be used for future publication. Again, confidentiality will be maintained and you will not be linked to the data by your name, title, or any identifiable item. You may withdraw your consent at any point during

the study.

If you have any questions, now or later, you may contact me at the number below. Thank you very much for your time and assistance. If you have any questions regarding your rights as a research participant in this study, you may contact the DSU Office of Sponsored Programs 605-256-5100, mickie.kreidler@dsu.edu.

Sincerely,



Todd A. Little
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Email: talittle@pluto.dsu.edu
Phone: 515-962-9448

This project has been approved by the DSU Institutional Review Board:

Approval No.: 10 (2/24/2012)

As a research participant, I have read the above, have had any questions answered, and agree to participate in the research project. I will receive a copy of this form for my information.

_____ Date _____

Participant's Signature

_____ Date _____

Project Researcher's Signature

APPENDIX C: LIST OF CODES

The initial 102 codes are as follows:

Actions discussed; Asking questions; Building understanding; Collaboration; Communication; Communication between tasks; Communicating; Culture; Dynamic Environment; Experiences; Extended Period of Time; Facilitating; Interacting with Others; Intuition; Organizational Skills; Patience; Persistence; Recognition of Tasks; Standardization; Teamwork – Collaboration; Understanding; Creating Knowledge; Data requirements for tasks; Database system; Dependency on control requirements; Dependency on documentation; Dependency on information system; Dependency on other department; Dependency on other task completion; Dependency on quicker responses; Dependent on external source; Developing perspective; Development of new perspectives; Different perspectives; Discussions lead to knowledge; Documentation; Documentation dependency; Documents being used; Email; Entering of data; Environmental conditions; Experiences build understanding; External task controls; Face-to-face meetings; Formal meeting; Immediate responses; Informal documents; Informal sessions; Information system required for knowledge creation; Internal dependence; Knowledge creation delayed; knowledge creation impacts employee; Knowledge creation impacts tasks; Knowledge creation requires quick response; knowledge creation through communication; Lack of understanding; Data Storage; E-Mail; External Documents; External Learning; Identification of Tasks; Informal documents; Information System; Internal Documents; Meeting; On-the-Job Training; Online Portal; Phone Conversations; Training – External; Training – Internal; Meetings; Multiple offices involved; Online portal; Organizational learning; Organizational task control; Phone calls; Policies change with knowledge; Portal provides information; Pre-defined reporting structure; Previous Experiences; Process steps; Reporting application; Reports drive action; Requirements set by organization; Socialization; Socialization activities; Socialization moves knowledge quicker; Staff serves key role; task awareness; Task control; Task control requirements; task dependency; Task dependency on previous tasks; Task dependent on reporting; Task identification; Task responsibility; Technology support; Time requirement for learning; Understanding task requirements; Understanding the task connections; Value of reports; Web-based reporting application

The initial codes were grouped and filtered eliminating codes seen as redundant. The refined list of codes is as follows along with their definitions within the scope of the project and its assigned category.

Refined Code	Definition	Final Category
Discussion of Actions	Actions taken by organization or individuals being discussed within group or personal settings.	Engagement
Asking Questions	Individuals actively asking questions to further knowledge of task or action taken.	Engagement
On-the-Job Training	Individuals receiving training through direct interaction with task.	Engagement
Collaboration	Individuals or groups interacting with other to resolve issues or complete tasks.	Engagement
Facilitating	Individual(s) helping to move an action or process forward.	Engagement
Face-to-Face Meetings	Meetings in which interactions occurred to discuss tasks.	Engagement
Formal Meeting	Meetings initialized on a regular schedule according to organizational or group requirements.	Engagement
Informal Meetings	Meetings initialized without official notice or schedule as needed within casual settings.	Engagement
Socialization	Individual(s) or group(s) interacting to share values or beliefs to build common understanding.	Engagement
Discussions	Formal or informal discussions between individual(s) lead to new personal knowledge.	Engagement
Communication	Individual(s) or group(s) exchanging information through personal or electronic methods.	Engagement
Task Impact	Knowledge creation impacts future task and processes.	Organizational Control
Policies Impact	Knowledge creation impacts organizational policies and strategies.	Organizational Control
Pre-defined Reporting Structure	Reports meeting organizational expectations and requirements established.	Organizational Controls
Technology Support	Various technologies within organization are supported and maintained.	Organizational Controls
Data Requirements	Task(s) dependency on type of data stored and accessed.	Organizational Controls
Data Entry	Task(s) dependency on data being obtained and stored within organizational database or structure.	Organizational Controls

Standardization	Organizational task(s) established according to internal or external standards.	Organizational Controls
Control Requirements	Tasks are dependent on established policies or regulations of organization.	Organizational Controls
Task Control Requirements	Task requirements or expectations defined by internal or external policies.	Organizational Controls
Organizational Requirements	Set of standards and policies established by organization.	Organizational Controls
Process Steps	Sequences of tasks within process defined by internal or external policies and standards.	Organizational Controls
External Task Controls	Task requirements established by external regulations.	Organizational Controls
Dependency on External Sources	Initiation or completion of task(s) dependent upon data and information from external sources.	Organizational Controls
Dependency on Documentation	Task(s) fulfillment dependent upon organizational documents.	Organizational Controls
External Documents	Task(s) dependent upon documents from external sources.	Organizational Controls
Internal Documents	Documents maintained and required by organization.	Organizational Controls
Actions Dependent on Reports	Task(s) initiation dependent on report(s) generated through previous task(s).	Organizational Controls
Dependency on Other Departments	Task(s) initiation or completion is dependent on other department(s) within organization.	Organizational Controls
Task Dependency	Task(s) initiation or completion is dependent on other task(s).	Organizational Controls
Development of new perspective	Individual gaining new perspective based on knowledge.	Perspective
Experiences build understanding	Experiences associated with task lead to better understanding of task and its connection.	Perspective
Intuition	Individual perception of the task and its required knowledge.	Perspective
Patience	Individual displaying ability to wait for task requirements to be met.	Perspective
External Training	Individual receiving training provided through external methods or resources.	Perspective
Internal Training	Individual receiving training provided through internal methods or resources	Perspective
Culture	Organizational or individual beliefs or values associated with task completion	Perspective
Dynamic Environment	Organizational or individual surroundings undergoing active conditions over time.	Perspective
Environmental Conditions	Conditions influencing the organizational or individual surrounds or circumstances	Perspective

Employee Impact	Knowledge creation impacts personal knowledge of employee.	Perspective
Value of Reports	Individual(s) and group(s) placing value on informal and internal reports.	Perspective
Informal Documents	Documents maintained by individual(s) and group(s) not required by organization.	Perspective
Building Understanding	Individuals gaining comprehension of task(s) to further personal knowledge.	Reasoning
Recognition of Tasks	Individual perception of task sequence and requirements.	Reasoning
Identification of Tasks	Individual establishing task sequence and requirements	Reasoning
Organizational Skills	Individual set of skills associated with ability to coordinate tasks and activities.	Reasoning
Understanding Task Requirements	Individual ability to understand expectations and requirements for task completion.	Reasoning
Understanding Task Connections	Individual ability to understand how one task or set of tasks are related to other tasks and processes.	Reasoning
E-mail Exchanges	Knowledge and information is provided electronic mail services.	Technology
Phone Calls	Knowledge and information is provided through telephony services.	Technology
Data Storage	Electronic storage of data and information for use within tasks and processes.	Technology
Database System	Organizational collection of data.	Technology
Information System Dependency	Individual(s) and group(s) dependent on information system provided and supported by organization.	Technology
Online Portal	Intranet services provided and supported by organization for means of exchanging knowledge and information.	Technology
Web-based Reporting	Web-based application for retrieving and accessing data and information.	Technology
Dependency on Quick Response Time	Task initialization is dependent on the length of time to complete previous task or process.	Time
Immediate Responses	Individual(s) or group(s) requires immediate responses to questions or issues raised during task.	Time
Socialization Moves Knowledge Quicker	Socialization activities provide mechanisms through which knowledge between individual(s) or group(s) can be moved faster.	Time
Extended Period of Time	Task completion requires extended periods of time.	Time

Time Requirement for Learning	Tasks require individual(s) to have extended periods of time to learn process and gain knowledge required.	Time
Knowledge Creation Delayed	Extended period of time for task completion delays potential knowledge creation.	Time