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# Information Technology Management Strategies to Implement Knowledge Management Systems

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This is to certify that the doctoral study by

Mary Jane McGee

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2017

Abstract

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MA, Louisiana Tech University, 2004

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Doctoral Study Submitted in Partial Fulfillment

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## Abstract

More than 38% of the U.S. public workforce will likely retire by 2030, which may result in a labor shortage. Business leaders may adopt strategies to mitigate knowledge loss within their organizations by capturing knowledge in a knowledge management system (KMS). The purpose of this single case study was to explore strategies that information technology (IT) managers use to develop and implement a KMS. The target population consisted of IT managers in a small-sized organization located in northwestern Florida who had implemented a KMS successfully. The conceptual framework for this study was organizational knowledge creation theory. The collection of public documents, execution of semistructured interviews with 5 qualified participants, literature on the topic, and member checking formed the determination of the findings of the study. Using triangulation and coding the data for emergent themes, 6 themes emerged from the data analysis: (a) training, (b) customer focus, (c) policy and governance, (d) leadership and management support, (e) communication and marketing, and (f) business process management. The application of the findings may contribute to social change by identifying strategies that leaders and IT managers from communities and government agencies use in implementing a KMS that may facilitate transparency and open flow of information to citizens, and allow access to timely, civic, and potentially life-enhancing information.

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# Dedication

I dedicate this doctoral dissertation to my daughter, Kathrinna, who has been a wonderful daughter throughout this journey. Thank you for being responsible, and independent, and for all your outstanding achievements. You made it easy for me to concentrate on my study. I also dedicate this doctoral dissertation to my mother, Consolacion, who gave me the motivation to gain more knowledge and for giving me many words of encouragement that have guided me throughout this doctoral journey. Her life teachings enabled me to endure this difficult, captivating journey, especially her teachings of patience, persistence, and prayer in all aspects of my life dealings. I dedicate this doctoral study to my husband, Chas, who is my strength and my rock. His continued support, encouragement, love, and guidance have been an inspiration during this journey of pursing my doctoral degree. Finally, I would like to thank my sisters, my brother, my aunts, uncles, cousins, and friends. I thank each of you, because without each of you, none of this would be possible. God bless you and know that I love you all deeply.

In loving memory of my father, Carmelo, who inspires me through his generational legacy to aspire for greater achievement.

# Acknowledgments

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To my sisters and brother, thanks for all your love, support, commitment, and for always believing in me. To my friend and mentor Linda, thank you for always having my back and for being there for me when I needed you. I also wish to express my gratitude for my aunts and uncles, and my cousins, for your motivation when I needed it.

To my friends, I say thanks for all of your help and for the resourceful mindsets you displayed in helping me through this journey. All of you have been a wonderful inspiration and blessing and have brought a lot of joy to my life.

My gratitude is also extended to all the participants that were ready and willing to be a part of the study by allowing me to interview them and to draw on their experiences. Thank you for your availability and for taking the time out of your busy schedules to assist me in this endeavor.

Finally, I cannot conclude without thanking the Lord Jesus Christ, my personal savior, for blessing me with the knowledge, strength, and perseverance to complete this journey. Without the presence of God in my life, this journey would have been impossible.

Table of Contents

List of Tables

# Section 1: Foundation of the Study

Effective knowledge management system (KMS) implementation strategies may benefit business leaders as a tool to capture and retain knowledge from departing employees. The lack of strategies to develop and implement a KMS threatens organizational performance, competitive advantage, and bottom-line profits due to knowledge loss from departing employees (Levy, 2011; Massingham, 2014; Massingham & Massingham, 2014). The need to retain, capture, and share knowledge of departing experienced employees emphasizes how the loss of organizational knowledge can lead to additional reductions in competitive advantage, organizational productivity, and economic growth (Jennex, 2014; Martins & Meyer, 2012). Researchers have studied KMS implementation failure rate (e.g., Saini, Nigam, & Misra, 2013); significant returns of adoption of KMS and factors that influence KMS use and acceptance (e.g., Zhang, Gao, & Ge, 2013); and the effect of implementing a KMS to help retain, transfer, and capture critical knowledge of departing employees (e.g., Joe, Yoong, & Patel, 2013). As Neumark, Johnson, and Mejia (2013) discovered, 38% of the U.S. public workforce will likely retire by 2030. This exodus of experienced workers may result in a labor shortage. Therefore, the reports of knowledge loss show that failure to implement a KMS may cause financial and productivity losses in organizations (Neumark et al., 2013). Business leaders may use the strategies to develop and implement a KMS to strengthen competitiveness in the industry.

## Background of the Problem

The effect of knowledge loss caused by departing employees and the inability of organizational leaders to capture and retain knowledge in an appropriate KMS may cause losses in sustainability and profitability. The need to capture and retain knowledge within organizations is critical because, in 2017, 31% of 1.96 million federal employees will be eligible to retire; these statistics reveal that experienced employees who may be retiring will increase sharply because they belong to a generational cohort leaving the workforce (Appelbaum et al., 2012; Martins & Meyer, 2012; U.S. Government Accountability Office, 2014). To mitigate the loss, Appelbaum et al. (2012) suggested that leaders implement a KMS that will facilitate the transfer, sharing, and retention of knowledge from experienced employees to current knowledge workers to help ensure workplace proficiency and effectiveness. If leaders do not implement KMS within the organization effectively, employees may not have the opportunity to codify, transfer, or share their organizational knowledge before they depart (Kim, Lee, Paek, & Lee, 2013). Information technology (IT) managers who understand the strategies used to implement a KMS may gain the foundation for successful KMS implementation. Jeng and Dunk (2014), who specialized in KMS implementations, noted that some researches have focused on technical issues and not on organizational issues; therefore, a significant need exists to address the lack of strategy. Researchers (Margherita, 2014; Valmohammadi & Ahmadi, 2015; Zhang, Lee, Huang, Zhang, & Huang, 2005) asserted that factors to consider during KMS implementation include user involvement, leadership support, IT governance, organizational learning, clear strategic objectives, business process

management, and marketing. These activities are essential parts of change management strategies. Dara and Yadav (2013) indicated a holistic approach to KMS implementation success, and they concluded that understanding of implementation strategy are lacking.

## Problem Statement

In 2017, 31% of 1.96 million federal employees will be eligible to retire, which could result in the loss of organizational knowledge if not adequately captured in a KMS (U.S. Government Accountability Office, 2014). Fifty to ninety percent of organizational knowledge, if not captured in a KMS, creates a knowledge gap, as well as an average annual financial loss of $1.2 million for medium-sized enterprises (Martins & Meyer, 2012; Massingham, 2014). The general business problem that I addressed in this study was the need for a KMS implementation strategy to capture organizational knowledge. The specific business problem that I addressed in this study was that some IT managers lack strategies to develop and implement a KMS.

## Purpose Statement

The purpose of this qualitative, single case study was to explore strategies that IT managers could use to develop and implement a KMS. The target population was five IT managers in northwestern Florida, United States, whom I selected because they were experienced in implementing a KMS. The data from the study may provide IT managers with strategies to contribute to social change because the implementation of strong information and KMS may empower community leaders to collaborate within an infrastructure for sharing information.

## Nature of the Study

Researchers use three primary methods to conduct research. These three methods are qualitative, quantitative, and mixed methods (Denzin & Lincoln, 2011). According to Mack, Woodsong, MacQueen, Guest, and Namey (2011), a qualitative research method is an appropriate approach when identifying and exploring the perspectives of participants in designing and implementing a process. Mack et al., (2011) also stated that a qualitative research method is ideal when understanding the phenomena through the involvement of participants.

In qualitative research, as opposed to quantitative or mixed methods, the researcher gains knowledge through in-depth exploration of an activity or process (Baxter & Jack, 2008), such as a KMS design; implementation; and improvement, to allow the discovery of underlying issues and concerns that affect the success of the KMS implementation process. The qualitative method was flexible, descriptive, and iterative in nature (Mack et al., 2011). In contrast, using the quantitative method provides researchers with a method to test theories by examining and comparing relationships. With this method, researchers examine dependent and independent variables to prove hypotheses (Bettany-Saltikov & Whittaker, 2014).

Whereas numerical data, measurements, and hypothesized relationships are important components of quantitative research, researchers use face-to-face interviews with participants in qualitative research. When exploring and capturing qualitative data, managers and implementers of KMS share their real-world experiences during semistructured interviews (see Yin, 2014). Similarly, the challenge with the mixed-

method approach includes requiring a researcher to incorporate qualitative and quantitative approaches; however, the collection of a variety of quantitative data was not the focus of my study. Therefore, using qualitative methodology was appropriate for my study involving the implementation of a KMS (e.g., Yin, 2014).

With a qualitative method in mind, I considered several designs to explore KMS implementation: the case study, phenomenology, and narrative designs. The case study design was appropriate for my study because I identified and explored strategies appropriate for implementing KMS. Yin (2014) noted that an inquiry is case study when the researcher focuses on investigating a contemporary phenomenon within its real-world context and relies on multiples sources of evidence. Case study design is an approach in which the researcher engages with the participants and provides insights into the activities and work-place challenges (Yin, 2014). Phenomenological studies involve observation of the participants' personal and lived experiences (Hudson, Duncan, Pattison, & Shaw, 2015; Moustakas, 1994). I also evaluated the narrative design because it involved collecting wide-ranging information related to lived experiences of participants (Denzin & Lincoln, 2011). A narrative design would not be appropriate for the study because researchers use this design to explore lived experiences and to understand how human lives fit the story (Denzin & Lincoln, 2011); however, the purpose of my study was to gain insight from participants relating to their real-world experiences implementing KMS. The evidence from multiple sources and outcomes, and data from participants who experienced real-world phenomena, helped me identify the

components useful in the KMS framework that could generate users' acceptance of KMS use. Therefore, the case study was an appropriate design for my study.

## Research Question

What strategies do IT managers use to develop and implement a KMS?

## Interview Questions

1. How would you describe your KMS implementation?
2. What were the strategies that supported the KMS implementation?
3. What were the challenges seen during the KMS implementation for addressing the strategies?
4. What metrics did you use to assess the success of the KMS strategies?
5. How did you develop the strategies used for the KMS implementation?
6. What other insights can you share that led to identifying and addressing strategies for successful implementation of a KMS?

## Conceptual Framework

Nonaka (1994) developed the organizational knowledge creation theory. In this theory, Nonaka suggested that a knowledge conversion process conceptualizes dynamic human activity. It involves processing and capturing knowledge and information regarding an organization's knowledge system (Nonaka, von Frogh, & Voelpel, 2006). Building on Nonaka's organizational knowledge creation theory, Nonaka et al. (2006) explained that organizational knowledge creation theory consists of two forms of basic knowledge: tacit (experience, perception, and skills) and explicit (language and documentation). Knowledge conversion prompts the evolutionary paths used to identify

conditions that enable knowledge creation through the socialization, externalization, combination, and internalization (SECI) model. This model became the central tenet of organizational knowledge creation theory (Nonaka et al., 2006). Likewise, Nonaka et al. suggested that organizational knowledge creation theory consists of knowledge conversion as a construct, and they concluded that KMS reflect an organization's knowledge base that stores, transfers, and utilizes knowledge assets. Nonaka's organizational knowledge creation theory and Nonaka et al.'s explanation of SECI model both align with my study, in which I explored the strategies that IT managers use to develop and implement KMS.

## Operational Definitions

*Change management strategy*: Change management strategy is the use of a structured, well-planned strategy during system implementation, embedded with organizational culture change, knowledge transfer, marketing concepts, and organizational learning, to gain user acceptance and satisfaction and to accomplish organizational change objectives (Al-Ghamdi, 2013; Chiang, 2013).

*Explicit knowledge*: Explicit knowledge is also known as codified knowledge, and it is transferable in the form of formal, systemic language, such as standard operating procedures, reports, and databases (Nonaka, 1994).

*Knowledge*: Knowledge is an intangible resource composed of tacit and codified knowledge resources that are transferrable and create a capability (Massingham, 2014).

*Knowledge loss*: Knowledge loss is an organizational concern that encompasses loss of contribution to the organizational memory, loss of relational knowledge with

fellow employees and customers, loss of work performance, loss of know-how, loss of know-who, and loss of know-what (Jennex, 2014).

*Knowledge management* (*KM*): KM is the process of managing knowledge resources (tacit and codified knowledge) focused on using knowledge for decision making and processes for sharing, discovery, capture, storage, retrieval, and dissemination (Jennex, 2014; Massingham, 2014).

*Knowledge management system* (*KMS*): KMS are enablers that support the movement and flow of knowledge around the organization, particularly in the process of knowledge sharing, acquisition, usage, retention, measurement, and preservation (Massingham, 2014).

*Knowledge transfer*: Knowledge transfer is the process by which expertise, knowledge, skills, and capabilities are communicated, translated, converted, filtered, and rendered, from the knowledge source to knowledge workers, such as outgoing to current employees, or from current to incoming employees, or from systems and documents to current or incoming employees (Agarwal & Islam, 2015).

*Tacit knowledge*: Tacit knowledge includes knowledge encompassing personal qualities and commitment, and it is the knowledge that an individual maintains (Nonaka & Krogh, 2009).

*Transformational leadership*: Transformational leadership is a leadership style that is associated with leaders' engagement elements such as participation, information delivery, and commitment, and it facilitates organizational culture change (Holten & Brenner, 2015).

## Assumptions, Limitations, and Delimitations

### Assumptions

Researchers use assumptions to identify preexisting beliefs about a study (Kirkwood & Price, 2013; Simon & Goes, 2013). Assumptions are beliefs that a researcher assumes to be true and critical to a study (Simon & Goes, 2013). I made three assumptions in this study. My first assumption was that the five participants would provide truthful and honest interview data. My second assumption was that recognition of the fast-paced and high turnover environment could be due to the overall construct, scheduled promotions, and overall mission of the organization. My third assumption was that a semistructured interview technique would capture important aspects of the participants' views, experience, perceptions, and thoughts regarding the strategies of KMS implementation.

### Limitations

Limitations are potential weaknesses associated with a study (Brutus, Aguinis, & Wassmer, 2013). Limitations such as deficiencies, circumstances, or influences are elements that may affect the results of a study but are beyond the researcher's control (Kirkwood & Price, 2013; Silverman, 2013; Simon & Goes, 2013). My research study had several limitations that revealed potential weaknesses. The first limitation was that a participant's view and experience might have been influenced by cultural or generational differences. The second limitation was that target employees came from several generations such as Baby Boomers, Generation X, and Generation Y. A third limitation was gaining access to all implementation documentation, governance documents, and

other KMS implementation information. Some files were not available in the current KMS and were stored in electronic mails and file shares of participants.

**Delimitations**

Delimitations are boundaries that researchers set for the study (Denzin & Lincoln, 2011). The scope of my study was limited to participants, both men and women, with a minimum of 5 years of experience, who were primarily involved in the KMS Microsoft SharePoint implementation. Though the organization employed IT managers who were geographically separated, I limited the interviews to five employees who met the criteria of an expert at a single site. The prerequisites of the study excluded personnel who did not meet the minimum KMS implementation, knowledge, and experience requirement that took place in northwestern Florida from 2007 to 2012.

## Significance of the Study

The results of my study have potential positive implications for both business and society. Results from this study might be beneficial to business leaders and IT managers because the results might provide a set of strategies and framework to facilitate successful KMS implementation process and success factors of a KMS in the organization. Successful KMS could affect the success of government and private industries by helping employees capture and transfer knowledge. Managers who took proactive measures saw an increase in knowledge accumulation and transfer, and they also saw growth in profits (see Levy, 2011 & Massingham, 2014).

## Contribution to Business Practice

This study may contribute to business practice and business knowledge. The results from this study could provide people in organizations with empirical evidence on successful KMS implementation to help business leaders strengthen competitiveness in the industry, facilitate innovation, and generate sustainable evolution. Jeng and Dunk (2014) posited that researchers have focused on only technical aspects of enterprise implementation of KMS. Researchers might need to explore further critical success factors such as positive culture change, knowledge creation, and organizational learning to help IT managers implement enterprise systems successfully (Jeng & Dunk, 2014).

Knowledge-intensive managers in businesses seeking to implement KMS could use the findings, conclusions, and recommendations from my study to provide a knowledge infrastructure to help retain, transfer, and capture critical knowledge of departing employees before they retire (Joe et al., 2013). Venugopal and Suryaprakasa (2011) noted that identifying and addressing critical success factors for successful KMS implementation could help business leaders understand the processes of knowledge capture and knowledge systems implementation for proposing solutions to existing worldwide business problems. After a successful KMS implementation, business leaders could enjoy the following benefits: (a) increased innovation, (b) improved competitive advantage, (c) improved organizational performance, (d) reduced duplication of effort, (e) decreased waste, (f) increased automation of business processes, and (g) increased returns from financial investment (Massingham, 2014). Users in organizations who

practice knowledge sharing may achieve higher levels of productivity and profit by using KMS (Massingham & Massingham, 2014).

### Implications for Social Change

In addition to the benefits to business, this study has potential social change implications. Users who accept, use, and adopt a successful KMS generate an organizational culture of knowledge sharing and knowledge-capturing (Zhang et al., 2005). The results from the study might contribute to positive social change by providing practitioners and IT managers from local communities and government agencies a KMS framework to improve social conditions and enabling citizens' access to an open-knowledge sharing and information. Local leaders from nonprofit or local organizations might adopt a KMS framework that could provide an effective flow of information for people to search, process, and have access to timely, civic, and potentially life-enhancing information (Rainie & Purcell, 2011).

## A Review of the Professional and Academic Literature

To analyze how researchers have described the problems of knowledge and productivity loss, I conducted a literature review to understand the strategies for KMS implementation as a capability to mitigate knowledge transfer methods. This subsection includes a review of the literature relating to strategies of successful KMS implementation. In the review of the academic and professional literature, I discuss related theories; KM practice; sharing and transferring of knowledge; knowledge loss; organizational culture; change management; factors affecting KMS implementation; and potential themes.

The review includes research materials from multiple databases accessed through the Walden University Library and Google Scholar. The databases that I used include AB/INFORM Complete, EBSCO, Academic Search Complete, Business Source Complete, Emerald Insight and Management Review, ProQuest Central, Science Direct, and SAGE Premier databases. The primary search terms used for database searches included *systems implementation success factors, knowledge management practices, change management, organizational culture, knowledge sharing, knowledge transfer, knowledge loss, organizational knowledge creation theory,* and *enterprise systems implementation.* Throughout the study, I used the terms *KMS, KMS, enterprise systems,* and *enterprise resource planning* (*ERP*) *systems* interchangeably.

The research process for this literature review led to 186 articles, books, and official government documents, of which approximately 104 appeared in the literature review. A total of 162 articles (87%) were peer-reviewed and 24 were not peer reviewed. A total of 158 (85%) references were published in or after 2013. The study included 186 references with 162 (87%) peer-reviewed references and 158 (85%) references published in or after 2013 and 28 were published in 2012 or earlier.

**Related Theories**

I analyzed three conceptual frameworks: dynamic capabilities theory (Chang, Fu, & Ku, 2015), Bass's theory of leadership (Bass, 1990), and organizational knowledge creation theory (Nonaka et al., 2006). I considered how these three theories establish a foundation for understanding key elements factors relating to KMS implementation. In

this section, I presented a description of the theories comprising the conceptual framework in the study and how they were related to the topic.

**Dynamic capabilities theory**. According to Chang et al., (2015), the basis of a successful implementation of an enterprise system is the dynamic capabilities theory, which integrates effective use of resources and leverages those resources to achieve operational goals. Chang et al. explained that the concept of dynamic capabilities was interrelated with the ability of senior management personnel to recognize opportunities for business transformation. Chang et al. proposed a model of implementation consisting of five stages: (a) establishment of the objectives, (b) assessment of the available resources and scope, (c) process redesign and integration and organizational learning, (d) system implementation, and (e) measurement and evaluation of performance. Although Chang et al. recommended the use of dynamic capabilities theory for different enterprise information systems implementations, this theory focuses on the technical and resources components of the implementation. This study is focused on KMS implementation strategies without focusing on technical aspects.

**Bass's theory of leadership**. In my review of the Bass theory of leadership, the second conceptual framework, I discovered a unique connection between leaders and followers, which includes several traits (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) necessary to bring about desired organizational outcomes and outstanding performance (Birasnav, 2014). Although the guidance of leaders may have significantly influenced KMS for achieving organizational performance, the focus of the theory is on the leadership transformation as

it applies to followers, and the theory enables followers to understand the value of a task. Bass (1990) theorized that transactional leadership is based on interactions between managers and employees and fosters corporate change through recruitment, selection, promotion, training, and development. The Bass theory of leadership is partially applicable to the study of KMS implementation. However, the Bass theory of leadership does not address KM practices and the importance of KMS in capturing knowledge. Therefore, the Bass theory of leadership was not best suited for the study.

**Organizational knowledge creation theory**. The organizational knowledge creation theory is focused on knowledge creation through the SECI process. The theory has emerged (Nonaka, 1994) and continues to evolve through the knowledge creation context (Nonaka, Toyama, & Konno, 2000). In knowledge conversion, a person's experience is expanded through the socialization, externalization, combination, and internalization; it is validated, connected to, and synthesized with the knowledge of other people (Nonaka et al., 2006). Nonaka et al. (2006) identified that the formulation of the organizational knowledge creation theory in the 1990s evolved owing to the increasing interest in organizational knowledge in academia and the businesses arena. The fundamental concepts from the organizational knowledge creation theory involve promoting leadership, knowledge workers, and systems, and they have become a new model for knowledge creation (Nonaka et al., 2006). The organizational knowledge creation theory applies to my study because its focus was on KM and KMS—the basis of KM activities. The research framework of the study was the foundation that allowed for the development of a KMS implementation. The critical elements and propositions

identified in the research were essential to the KM framework based on the observed patterns of people, process, and technology.

Song, Seung, and Uhm (2012) recommended a systematic measurement scale for organizational knowledge creation practices from the SECI model of Nonaka's organizational knowledge creation theory; this scale has five knowledge creation phases: (a) sharing tacit knowledge, (b) creating concepts, (c) justifying concepts, (d) building prototypes, and (e) cross-leveling knowledge. Song et al. discovered that a reliable measure emerges from the analysis of knowledge conversion and creation where organizational knowledge creation practices and other concepts (e.g., learning culture, information systems, and team performance) play a key role. The conversion process emphasizes the use of organizational knowledge creation theory in the capture of information and validates the relationship between the SECI model and knowledge creation theory.

Human interaction, information sharing, and knowledge creation are critical to the success of organizations. Vick, Nagano, and Santos (2013) stated that the organizational knowledge creation theory provides the basis for discussion during the exploitation of tacit and explicit knowledge and conversion of information to knowledge. Vick et al. posited that employees in an organization process information and turn it into knowledge while they use information systems to capture internal business information needs. Although dynamic capabilities theory relates to systems implementation, the integral part of the theory focuses on the effective use of resources and technical capabilities. Similarly, the Bass theory of leadership involves transformation of leadership for

achieving organizational performance. The organizational knowledge creation theory was best suited for this study because it focuses on users' knowledge creation and capture using KMS, and facilitates through leadership support.

**Knowledge Management Practices and Knowledge Management Enablers**

Several researchers (Jain & Joseph, 2013; Oliva, 2014; Ramin, Taib, Hashim, Noordin, & Yasin, 2013) defined *knowledge management* (*KM*) comparably. KM is a structured method focused on creating, sharing, harvesting knowledge, and leveraging it as an organizational asset to improve organizational leaders' abilities to deliver products or services (Ramin et al., 2013). Like Ramin et al. (2013), Jain and Joseph (2013) defined *KM* as a process used to create, capture, store, exploit, share, and apply knowledge to benefit employees, the organization, and its customers.

Various definitions of *KM* and its associated practices reveal that KM is an organizational asset. Oliva (2014) claimed that organizations could achieve competitive advantage by having its employees adopt KM practices. KM practices facilitate improvement of business processes. Oliva posited the main barriers to organizational KM are definition, acquisition, dissemination, storage, application, and evaluation of knowledge. The KM practices are delineated based on (a) alignment with organizational strategy, (b) a cultural focus on innovation, (c) a level of competence achievement, (d) a transparency in the definition of knowledge, and (e) upgraded tools (Oliva, 2014).

Other researchers (Jain & Joseph. 2013; Oliva, 2014; Ramin et al. 2013) emphasized a competitive advantage for people in organizations who adopt KM practices and value KM practices as a major contributor to their success. Hasanian, Chong, and

Gan (2015) stated that specific KM factors showed the highest predictor of success associated with the creation of an effective knowledge-based customer relationship. KM factors such as (a) strategy, (b) management leadership, (c) process, (d) IT, (e) organizational infrastructure, (f) organizational culture, (g) training and education, and (h) performance measurement influence customer knowledge creation and distribution in an organization. This influence, in turn, improves customer satisfaction (Hasanian et al., 2015).

Likewise, Matayong and Mahmood (2013) emphasized that the bases of organizations' successes in the use of KMS are as follows: (a) adoption, (b) diffusion, (c) usage, and (d) implementation. Matayong and Mahmood further related that people in some organizations are deficient in assimilating the KMS; they use it to innovate. As such, investigating the strategies that determine the outcomes of models such as adoption, diffusion, use, and implementation is important to knowledge workers in those organizations. Ultimately, KM enablers and KM practices result in providing customers with organized and correct data—the basis for gathering data and information—and are a reliable channel for generating and sharing knowledge (Jain & Joseph, 2013; Oliva, 2014; Matayong & Mahmood; 2013; Ramin et al., 2013).

Several researchers explained how KM practices affect organizational strategic planning and management of knowledge and information (Alegre, Sengupta, & Lapiedra, 2013; Jayawickrama, Liu, & Smith, 2014). The purpose of KM is to aid business leaders in achieving information, knowledge creation, and diffusion (Alegre et al., 2013). The fundamental emphasis of KM is steering organizational strategic planning so business

leaders can recognize the types of knowledge that exist in business processes (Alegre et al., 2013). Knowledge dissemination includes business processes that efficiently integrate tacit and explicit knowledge throughout an entire organization (Alegre et al., 2013). A KMS is a group of systems and procedures that business leaders use to manage, capture, and store knowledge (Alegre et al., 2013). KM is a resource and capability that business leaders can implement to support organizational strategic planning (Jayawickrama et al., 2014). The goal is to ensure that the discovery and documentation of the required knowledge and people involved with new projects (e.g., ERP implementation processes) will incorporate people, products, and services (Jayawickrama et al., 2014). Business leaders adopt KM practices and KMS as fundamental tools to facilitate KM strategy and knowledge capture.

The need for a KMS to facilitate and create knowledge sharing is an important influence in organizations. Kanjanabootra, Corbitt, and Nicholls (2013) suggested that strong KM practices positively affect internal communications (ICs); KM technologies serve as the structural mechanism to leverage KM practices. In addition, positive organizational performance, innovation, and transformation are a stable set of management practices that result from the maximum use of IC assets and KM technologies (Kanjanabootra et al., 2013). Although Kanjanabootra et al. emphasized the maximum use of ICs, Bharati, Zhang, and Chaudhury (2015) believed in the use of social media as a KM enabler. Bharati et al. explained that the emphasis on KM has led to improved knowledge quality in organizations, particularly in the use of social media as a KM enabler. Bharati et al. discovered that three dimensions of social capital are as

follows: (a) structural, (b) relational, and (c) cognitive. Each is significantly associated with organizational KM. The use of social media is a positive link between increased interactions among knowledge workers, and it enhances the KM practices in the organization.

Several researchers (Donate & de Pablo, 2015; Lai, Hsu, Len, Chen, & Lin, 2014; Martín-de Castro, 2015) explained the relationships between leadership, KM, and innovation through a different lens. The role of leadership in KM initiatives is a key aspect of innovation strategy. Donate and de Pablo (2015) theorized that KM is critical for the innovation process. In addition to the work done by Donate and de Pablo (2015), Martin-de Castro (2015) expounded on the cross-fertilizing role of three different research constructs: (a) collaborative/open innovation from strategy and innovation management research, (b) absorptive capacity from knowledge-based view, and (c) market orientation from marketing research. As organizational leaders recognized the need to develop, implement, and use KMS, the employees' performance and innovation improve (Kanjanabootra et al., 2013; Massingham, 2014).

Innovation propels organizational leaders to stretch the bounds of limitations and create new strategies using KM processes and KM technologies. Lai, Hsu, Len, Chen, and Lin (2014) found that knowledge creation, knowledge storage, industry cluster resources and relationships, market performance, and product performance were related to the improvement of corporate innovation performance. Lai et al. (2014) indicated that by using industrial clustering, businesses leaders had frequent interaction with employees from downstream and upstream firms; and this increased interaction resulted in better

innovation performance. Lai et al. (2014) also noted that the internal and external KM practices facilitated access and acquisition of resources through lower costs and improved relationship among sub organizations.

Business leaders can take the approach of coaching, mentoring, and building trust to help support employees in knowledge sharing before implementing a new system (Liu, 2013; Pangil & Chan, 2014). The purpose of KM, according to Liu (2013) is to generate innovations and new ideas to respond to the changes in the competitive operating environment. The main benefits of enterprise resource planning (ERP) systems are to help business leaders manage and monitor the flow of information within an organization (Liu, 2013). Although Donate and de Pablo (2015), Liu (2013), and Martin-de Castro (2015) had a similar view on KM and innovation, Lai et al. (2014) discovered a different approach. Leaders needed to develop external relationships and networks through KM, organization learning, and intellectual capital to succeed in technological innovation. A major strength of the study by Apak and Atay (2014) was the discovery that business leaders did not realize the importance of KM. The concern was for business leaders to realize that if a knowledge-based economic approach had been applied, their chances to prove the new value of knowledge would have helped businesses survive in the global economy. Apak and Atay (2014) further noted that there was a high correlation between innovation capability and KM capacity in small and medium enterprises (SMEs). Finally, Apak and Atay (2014) believed that with the support of artificial intelligence and use of modern technology, a cost-effective customer-driven design and manufacturing process would produce an agile and optimal industrial production for small and medium

enterprises. These authors (Apak & Atay, 2014) theorized that effective KM strategies would improve performance, growth, and innovative activities in SMEs while penetrating the international markets.

Authors (Findikli, Yozgat, & Rofcanin, 2015; Sykes, Venkatesh, & Johnson, 2014) revealed different findings affecting the innovation, training, and KM initiatives found in an organization. Findikli et al. (2015) discovered a strong correlation between exploration and exploitation—some of the human resource practices associated with organizational innovation, and KM capacity. The authors (Findikli et al., 2015) pointed out that training and compensation were closely related to exploration and exploitation; they also emphasized that knowledge sharing and use of KMS were beneficial to employees (Findikli et al., 2015). Sykes, Venkatesh, and Johnson (2014) noted that business leaders should offer training for employees to maximize the benefits and features of the system and should support the learning process during the implementation phase. As such, although KM and innovation were related, knowledge sharing using KMS would also benefit employees.

Monavvarian, Asgari, Akhavan, and Ashena (2013) and Kianto, Ritala, Spender, and Vanhala (2014) showed that KM practices and implementation involved human factors, social capital, and intellectual capital. Monavvarian et al. (2013) suggested that social and human factors were the most important aspect of a successful implementation of KM. Monavvarian et al. (2013) noted that the human-social capital (SC) had the greatest effect on KM because of the strong relationship between individuals and groups in organizations; SC facilitates the development of intellectual capital, and enhances

knowledge capture, codification, and sharing. Kianto et al. (2014) posited that strong KM practices have positive effects on intellectual capital (IC); and KM technologies serve as the structural mechanism to leverage these practices. Additionally, Kianto et al. (2014) argued that positive organizational performance resulted from the maximum use of IC assets, innovation, and KM practices. Researchers (e.g., Luu, 2014; Marciniak Amrani, Rowe, & Adam, 2014; Shehata, 2015) strongly believed that KM practices and KM implementation would not be successful by relying solely on technological factors (hardware and software) because social and intellectual capital, as well as the human side of the KM, are key elements of KM in the organization.

Several studies (Kalyar & Rafi, 2013; Sabir & Kalyar, 2013; Wu & Chen, 2014) exist regarding learning cultures, innovation, knowledge transfer, and influence of organizational learning to knowledge creation. The value of organizational learning in a knowledge-based organization plays a major role in creating knowledge. Employees with high job satisfaction are more innovative and participative in learning cultures than employees who are dissatisfied with their jobs (Kalyar & Rafi, 2013). Representatives organizations with strong learning cultures encourage scientific innovation (Kalyar & Rafi, 2013). Furthermore, opportunities for organizational learning during knowledge transfer may be beneficial to remaining or new employees; and the result of this exchange of knowledge could result in job satisfaction (Sabir & Kalyar, 2013). Sabir and Kalyar (2013) emphasized how knowledge transfer could influence positive social change because of the increased competitive advantage, higher employee retention, and job satisfaction. Guo, Wang, and Feng (2014) explained that business leaders believe that

systems implementation will not succeed without a proper learning environment because the culture of end users can influence its success. Guo et al. (2014) emphasized business leaders should direct the learning of end users for them to appreciate the benefits and the enhancements of ERP systems. An organization's learning culture affects knowledge transfer among individuals. Wu and Chen (2014) indicated that knowledge assets and process capabilities produce organizational outcomes. Wu and Chen (2014) believed organizational leaders should focus efforts on the improvement of business process capabilities and KM-enabled performance to achieve a competitive advantage thereby profiting from KM investments. The implementation of KM tools could transform an organization into a learning organization where information sharing is an employee value. Al-Aama (2014) explained that with the implementation of effective KMS, knowledge workers within organizations could create, capture, organize, and share knowledge among employees. Al-Aama (2014) believed that executive members in organizations faced challenges, such as high employee turnover, drastic expansion of digitized information (also known as big data), the need to make quick and accurate decisions, the need to eliminate redundant efforts, and the need for collaboration among employees. Therefore, KMS implementers would need to use a taxonomy composed of numerous KM tools as an enabler to capture knowledge (Al-Aama, 2014). The use of taxonomy and KM tools facilitated the critical processes of knowledge creation, organization, and sharing (Al-Aama, 2014).

Diffin, Coogan, and Fu (2013) and Saini et al. (2013) found similar revelations regarding the need for a successful KMS. To understand what makes an organization

successful, Diffin et al. (2013) explored the selection, implementation, and result of Microsoft SharePoint technology as the framework for organizing and sharing collective knowledge. The SharePoint implementation offered a centralized communication and collaboration system among staff members and served as a documentation management solution (Diffin, Coogan, & Fu, 2013). Saini et al. (2013) emphasized the importance and need for a deeper understanding of portal implementation because, although portal capabilities provide businesses with benefits, the solution still have a high failure rate. The risk and cost of a failed system implementation is a huge concern for business leaders (Saini et al., 2013). Therefore, it is critical for leaders to understand the success factors involved in its implementation.

Although criticisms existed surrounding the difficulty of KMS implementation, Massingham (2014) and Shehata (2015) argued that the success of KMS implementation was achievable pending certain success factors in the strategy. Massingham (2014) opined that KM organizational change affected the performance of KM implementation in terms of user awareness, leadership direction, purpose, role clarity, and users' resistance to change. The benefits of KMS implementation in organizations improved cash flows generated by investment, input management, acquisition, and employee work quality (Massingham, 2014). Shehata (2015) revealed six elements of KMS that had positive influence on firm performance: (a) knowledge creation, (b) acquisition, (c) codification, (d) diffusion, (e) transfer and, (f) measurement. Shehata (2015) explained that KMS facilitated deployment of essential knowledge processes to improve organizational performance. Nonetheless, KMS are KM enablers that help acquire

knowledge, convert it into a useful form, apply or use knowledge created, and reuse it (Shehata, 2015). The introduction of KMS has enabled leaders to facilitate KM sharing throughout organizations.

The implication for managers is to develop and implement KMS successfully to provide organizational leaders with a competitive advantage in the marketplace (Mathrani, Mathrani, & Viehland, 2013; Sindakis, Depeige, & Anoyrkati, 2015). Mathrani et al. (2013) believed that enterprise systems and digital business strategy influence the use of data in decision-making processes. Mathrani et al. (2013) also noted that managers based their decisions on knowledge created, operational efficiencies, knowledge captured, and information disseminated within an organization. A successful implementation of enterprise systems resulted in process improvements, data transformation, and financial performance improvements (Mathrani et al., 2013). KMS were valuable to business leaders because they helped strengthen the competitiveness of the leaders in the industry, facilitated innovation, and generated sustainable evolution (Sindakis et al., 2015).

Enterprise systems provide a knowledge and information flow in the areas of supply chain and customer relationship management. Aburub (2015) explained that enterprise systems facilitated performance improvement in terms of cost reduction, information, transparency, and quality, and more efficient business processes. Aburub stated that enterprise systems improved relationships with suppliers, customers, and partners. The use of enterprise systems played a significant role on executives' business agility (Aburub, 2015). Kosalge and Ritz (2015) stated that business leaders who

transitioned to an enterprise system managed their accounting, sales, inventory, operations, and improved the supply chain management, inventory or warehouse management, and customer relationship management processes. The transition to enterprise system use resulted in the overall increase in productivity. More importantly, Kosalge and Ritz discovered that business leaders enjoyed the following benefits from post-enterprise system implementation: (a) process improvement and increased process controllability, (b) improved process quality and predictability of business, (c) organizational transparency, (d) integration of activities between departments, (e) improved reporting, (f) discipline in operations, (g) customer/supplier network management, (h) reduction of lead-time, (i) real-time information from products and processes, (j) improved on-time delivery, (k) savings on transaction costs, and (l) improved market responsiveness.

The implementation of KM enterprise systems helps knowledge workers manage the flow of information among multiple entities. Margherita (2014) opined that enterprise systems implemented for business process and information management contributed to the value creation of organizations, and provided greater customer satisfaction, productivity, speed, and a broader organizational view. García-Álvarez (2015) discovered that information and communication technologies (ICTs) influenced KM processes, innovation, and organizational learning within organizations. Using the SECI model, García-Álvarez (2015) determined that ICTs captured tacit knowledge and facilitated encoding of the dialogue between employees and customers. This dialogue aided the conversion of knowledge from tacit to explicit, and newly created knowledge became

available for sharing (García-Álvarez, 2015). García-Álvarez (2015) further stated that the utilization of ICTs facilitated the creation of a business model through KM processes, and resulted in innovation and business performance. Reyes, Worthington, and Collins (2015) revealed that top-level managers believed that enterprise KM technologies contributed to agility, adaptability, and alignment within the organization, and improved performance and outcomes of business operations. Technologies, such as enterprise systems and ICTs, provided organizations with real-time access to codified knowledge practices, business processes, and communication, and contributed to management and capture of business operations.

**Knowledge Sharing and Transfer**

Influence, generational diversity, and use of KMS are essential to successful knowledge transfer. Knowledge transfer takes place through discussion among brokers in organizations as a process to formalize knowledge transfer (Conklin, Lusk, Harris, & Stolee, 2013). Conklin, Lusk, Harris, and Stolee (2013) emphasized that organizations have knowledge brokers—influential leaders who serve as facilitators between knowledge creators and users—to facilitate formal knowledge transfers. Levy (2011) stated that organizations with retiring employees do not risk business loss and competitive advantage if they have a process that engages in transferring and retaining knowledge. Levy (2011) argued that knowledge continuity produced retention through its structured documentation and integration. The capture of lessons learned and best practices, knowledge transfer based on prioritization, and use of enterprise KMS were all benefits of KMS.

The characteristics of each generation in the workplace influence knowledge transfer methods. Gursoy and Karadag (2013) discovered that managers needed to recognize the importance of differences and its influence in workplace attitudes, interactions, job satisfaction, and productivity. Gursoy and Karadag further noted that managers should capitalize on these differences when implementing organizational change, decreasing tension and conflict, and fostering generational synergy in the workplace. If managers capitalize on these strengths, KM in the context of a multigenerational workplace—especially with a high percentage of eligible retirees—can be useful when facilitating intergenerational knowledge transfer (Gursoy & Karadag, 2013). Cummings-White and Diala (2013) emphasized the importance of integrating KM into an organization's processes in combination with culture change to promote knowledge sharing and transfer. Cummings-White and Diala (2013) further noted that capturing, retaining, and leveraging knowledge of older workers would allow younger workers to leverage existing organizational knowledge to foster efficiency and productivity. Business leaders' approaches of using communities of practice may contribute to modifications in the practice of knowledge transfer in businesses with a multigenerational workforce.

Business leaders realized the importance of enabling a KMS concept to encourage managers and employees to participate in knowledge sharing. Sousa and González-Loureiro (2015) noted that the high levels of creativity and innovation at organizational levels were associated with the need of managers and employees to participate and share knowledge. Sousa and González-Loureiro (2015) indicated that knowledge sharing and

reuse were difficult for managers due to the availability and use of different mechanisms (such as documents, databases, intranets, KMS, communities of practices, and groupware). The lack of a structured KM strategy in an organization negatively impacted managers' willingness to use shared knowledge.

Although Sousa and González-Loureiro (2015) believed in a standardized capability to allow participation and sharing of knowledge, Baralou and Tsoukas (2015) introduced another concept that captured knowledge from a synchronous and virtual environment. Baralou and Tsoukas (2015) indicated that in addition to face-to-face interactions, workers created and transferred knowledge through information and communication technologies such as synchronous teleconferencing tools (like Skype), collaborative software applications that allow users to create, share, and edit files and electronic mails. Baralou and Tsoukas (2015) believed that knowledge is created simultaneously through a dialogical or conversational basis and virtual communication that is increasingly conducted via ICTs, instant messaging, and a variety of media. Therefore, knowledge transfer through a synchronous and collaboration format is an outcome of knowledge creation.

Wikis are an example of a collaboration tool used for knowledge capture because of the capability to track modifications; such tracking allows individuals to view contributions provided by other team members in a simple manner (Kiniti & Standing, 2013). Pangil and Chan also noted that a virtual team's effectiveness is associated with the three dimensions of trust: (a) personal-based, (b) institutional-based, and (c) cognitive-based. This type of tool is widely used by virtual teams. Pangil and Chan

(2014) noted that with virtual teams, it is critical to sustain personal-based trust among its members to improve the knowledge sharing practice and create a platform to facilitate institutional-based trust. The influence of trust and knowledge sharing contribute to the effectiveness of virtual teams.

The culture in organizations—mostly government ones—and employees' attitudes towards knowledge sharing are positive when individuals work in hierarchical environment (Buheji, Al-Hasan, Thomas, & Melle, 2014). Luu (2014) indicated that employees were willing to share knowledge if organizations had a strong culture, ethic, and competitive intelligence. Luu (2014) believed that managers and business leaders should focus on the creation of a dynamic knowledge sharing culture and consider value-added factors as critical influences in the success of KM implementation. The elements discussed in the studies of Buheji, Al-Hasan, Thomas, and Melle (2014), and Luu (2014) are significant factors of culture change or openness. Through culture change, business leaders optimize knowledge transfer and create a pathway to building competitive advantage.

Lee and Lim (2015) reported that KMS is an effective organizational knowledge sharing enabler; its successful implementation impacted the level of utilization concerning knowledge creation, reuse, and dissemination. Lee and Lim (2015) illustrated several aspects of KMS: (a) functions, (b) quality, (c) content, (d) user interface, (e) user satisfaction, and (f) perceived benefits. However, knowledge workers believed that if the KMS was slow, had a weak set of functions and features, and had an inefficient search capability; it could affect users' acceptance and satisfaction (Lee & Lim, 2015). The

functionality and stability of a KMS influence the knowledge workers' acceptance and usage.

Rao, Guo, and Chen (2015) reported results consistent with the findings in Lee and Lim's (2015) studies. Rao et al. (2015) believed KMS enable and facilitate (tacit) knowledge sharing in organizations. The reliability and availability of knowledge and KMS were necessary for timely decisions and actions of managers and employees. Rao et al. (2015) indicated that employees viewed knowledge sharing as a social process where employees shared experiences and learned from each other. This exchange resulted in the accumulation and acquisition of new knowledge to improve employee performance. The influence of knowledge sharing and KMS is critical in the business processes and structure of an organization (Rao, Guo, & Chen, 2015).

Explicit and tacit knowledge sharing practices facilitate motivation and performance. Hau, Kim, Lee, and Kim (2013) discovered that organizational reward systems could be counterproductive to knowledge transfer endeavors. Hau et al. (2013) noted that organizational rewards have a negative effect on tacit knowledge transfer but a positive effect on explicit knowledge transfer. Employee motivation towards transfer knowledge also affects KM efforts (Evans, 2013). Evans (2013) revealed that a positive correlation between the level of motivation and willingness to share knowledge and knowledge transfer behavior exists. Social affiliation with a group, trust, and rewards are factors individuals consider when they determine their willingness to transfer knowledge (Evans, 2013). Thus, motivation among employees plays a key role in transferring knowledge (Hu & Randel, 2014).

Hu and Randel (2014) stated that a positive relationship existed between extrinsic motivation and knowledge sharing. Sankowska (2013) noted strong connections between employee trust and knowledge transfer. Hu and Randel (2013) posited that organizations with a deep-rooted culture of trust have employees who display willingness to share knowledge. Business leaders in organizations who illustrated presence of knowledge transfer did so based on the trust that employees had; this trust is directly related to a strong competitive advantage (Sankowska, 2013). Therefore, motivational factors, employee trust, and rewards positively influence knowledge sharing.

In addition to the findings of Hau et al., (2013), Evans (2013), and Hu and Randel (2014), Wang, Wang, and Liang (2014) reported a different finding that revealed tacit knowledge sharing significantly contributed to all components of intellectual capital—human, structural, and relational capital—while explicit knowledge sharing significantly contributed only to human and structural capital. Additionally, Wang et al. (2014) indicated that human, structural, and relational capital played vital roles in improving the operational and financial performance of businesses. The concept of tacit knowledge sharing consistently produced similar benefits to the financial and operational performance of an organization.

Another way to share knowledge is via discussion forums in virtual communities. Reliable technical infrastructure with discussion forums facilitated communication and enabled knowledge creation and knowledge sharing in virtual communities. Atapattu and Jayakody (2014) suggested that, in addition to a reliable KMS, employee propensities (such as teamwork, incentives, continuous learning, and openness to change) were top

determinants of KM success. As such, the practice of teamwork among knowledge workers was a key source of the knowledge-generation process. Consumer participation and interaction in discussion forums contributed to building trust, commitment, and knowledge, and enhanced online relationships (Atapattu & Jayakody, 2014). Similarly, continuous learning promoted high performance and advancement for workers who were open to such change; these people influenced the success of KM because they were willing to generate new knowledge, to take on new projects, and to work with teams (Atapattu & Jayakody, 2014). Reliable KMS provide a consistent collection method for collating, storing, and disseminating data that facilitate organizational performance and success of KM initiatives.

Expert employees are vital to organizations. When organizational leaders ignore lack of knowledge transfer among employees, the result may be decreased organizational productivity and output, and loss of competitive advantage (Kim et al., 2013). Knowledge transfer, codification, or sharing are important to business leaders who focus on reducing productivity and competitive advantage loss, especially when expert employees depart the organization, receive promotions, or change positions (Kim et. al., 2013). Therefore, business leaders should recognize that losing employee experience and productivity might result in knowledge loss.

**Knowledge Loss**

Knowledge loss is detrimental to organizational performance. Daghfous, Belkhodja, and Angell (2013) stated that KM strategies, such as the implementation of enterprise KMS, should be in place to mitigate knowledge loss. Daghfous et al. (2013)

indicated that organizations should (a) retain and disseminate architectural knowledge, (b) improve strategic coordination among units, and (c) develop existing capabilities through networking. Therefore, in Daghfous et al.'s (2013) study, the authors found that organizational leaders relying exclusively on codified documents and KMS could undermine knowledge retention and lead to knowledge loss.

In a study exploring knowledge loss, Jennex (2014) argued that the failure to capture job-related experiential knowledge of departing employees resulted in a direct loss to the organizational memory, loss of relational knowledge with the internal and external social network, and compromised work performance; the ultimate result was a decrease in organizational productivity. Martins and Meyer (2012) believed that knowledge loss affected the economic growth of organizations that faced a huge risk when employees left due to retirement, turnover, mergers, and acquisitions. Therefore, managers and business leaders have expressed concern and interest regarding strategies to help retain knowledge before experts depart their organizations. Martins and Meyer (2012) posited that organizational factors, such as knowledge loss risks, knowledge behaviors, and leadership and strategy implementation, influenced and validated the need for knowledge retention.

Lacking a standardized documentation process and the inability to capture knowledge of departing personnel using a KMS could affect a company's survival. The impact of loss of productivity resulting from a lack of KMS may result in decreased customer base and reduced organizational success (Forcada, Fuertes, Gangolells, Casals, & Macarulla, 2013). The loss of knowledge may be a factor in decreased productivity and

client satisfaction (Forcada et al., 2013). Likewise, Massingham and Massingham (2014) found that common emergent themes practical outcomes were time and cost, capability growth, and performance improvements. Massingham and Massingham noted seven key organizational problems associated with the practical outcomes of knowledge loss: (a) new staff, (b) younger staff, (c) capability gaps, (d) slow task completion, (e) work outputs not used, (f) resource cuts, and (g) low productivity. Additionally, Massingham and Massingham (2014) highlighted several practical outcomes from knowledge loss: (a) learning curve, (b) experience curve, (c) strategic alignment, (d) connectivity, (e) risk management, (f) value management, and (g) psychological contract. To ignore the practical outcomes of knowledge loss could influence the competitive advantage of an organization.

To justify the need for knowledge transfer programs, business leaders need to be cognizant of workforce projections and to include the number of experienced employees that may decrease over the next decade because of increased retirements (Neumark et al., 2013). Neumark et al. (2013) revealed that 38% of the United States public workforce would likely retire by 2030. Business leaders will soon face a labor shortage triggered by an aging workforce and decreasing numbers in the next generation of workers (Neumark et al., 2013). With the rising numbers of retirements, without adequate knowledge transfer strategy, state and federal agencies may reduce the capability to provide services to citizens (Pee & Kankanhalli, 2015). Failure to implement a KMS to allow for knowledge transfer for remaining employees may result in productivity loss.

Organizational leaders who fail to avoid knowledge loss could lose sustainability and organizational productivity. Joe et al. (2013) reiterated that business leaders should realize how critical it is to take necessary steps to retain the expertise and knowledge of employees before they leave. Joe et al. (2013) identified valuable concepts resulting from knowledge loss due to departure or retirement of experts: (a) subject matter expertise, (b) expertise about business relationships and social networks, (c) organizational knowledge and institutional memory, (d) skill in managing business systems, processes, and value chains, and (e) understanding of governance. The loss of valuable knowledge concepts would affect the operations of the organization.

**Change Management Strategies**

Integrating a change management strategy is critical in the implementation of a KMS. Planning efforts and setting the stage for change during KMS implementation are equally important. The implementation of enterprise systems should include change management strategies to enable organizational culture transformation, knowledge transfer, and organizational learning (Chiang, 2013). An organizational change management strategy would increase the probability of success when IT managers implemented a KMS.

Change management strategy at an individual and organizational level should include change readiness to facilitate knowledge acquisition, creation, and diffusion. Al-Ghamdi (2013) reported results consistent with findings in Valmohammadi and Ahmadi (2015). Al-Ghamdi (2013) described that effective change management strategies during KMS implementation are critical when balancing organizational culture, readiness, user

acceptance, user training, and cost. Valmohammadi and Ahmadi (2015) explained that the critical success factors of KM implementation were KM strategy and organizational culture. Therefore, managers should align business strategy with organizational structure, processes, and human resources to be successful in KM (Valmohammadi & Ahmadi, 2015). When IT managers introduce a new system to users, change management strategies (such as training, processes, and organizational culture) provide users the readiness to change.

The support of senior management personnel in the integration of change management processes and methods is important to effect change—particularly in the realm of KMS implementation. Al-Haddad and Kotnour (2015) noted that when implementing change, managers should recognize the importance of alignment because it influences organizational strategy, internal structure, jobs and attitudes, and culture. Al-Haddad and Kotnour (2015) posited leaders should plan for the change, address the critical factors, and most importantly, adopt a structured, methodical process to achieve success. For managers to achieve successful organizational change during the initial stages of KMS implementation, the importance of change management processes, change enablers, and change methods should be considered (Al-Haddad & Kotnour, 2015). Similarly, the importance of how these concepts and how they are aligned with the role of leadership in the organizations should be analyzed (Al-Haddad & Kotnour, 2015). Fazey et al. (2014) emphasized the importance of business leaders to an organization because they facilitated a culture that supported implementing a successful ERP. Change enablers

are critical to the success of change strategy because they set a clear concept and address critical factors that could influence change success.

Knowledge is a critical factor that can facilitates organizational change and innovation through its influence in culture change and KMS capabilities (Bagheri, Hamidizadeh, & Sabbagh, 2015). Bagheri, Hamidizadeh, and Sabbagh (2015) theorized that KMS and infrastructure facilitate the capability of knowledge reuse and the sharing of existing business practices. Managers should align KM processes, knowledge workers' learning cultures, collaboration, and IT support by implementing organizational change to produce performance and successful outcomes (Bagheri et al., 2015).

The role of leadership, technology, knowledge sharing, and organizational learning are critical to the success of KMS implementation. Jacobs, Witteloostuijn, and Christe-Zeyse (2013) indicated that change was often associated with failure and risk. Therefore, leaders should not ignore organizational change, because diverse, cultural, and institutional differences influence the success or failure of organizations. Jacobs et al. (2013) believed in the role of knowledge sharing and IT when implementing organizational change. Jacobs et al. revealed that knowledge exchange, cross-sector collaborations, and the exchange of best practices between members of organizations were characteristics of a successful change management program. Similarly, the role of technology in the organizational change process is vital because experts have acknowledged technology as an agent of change and a key contingency factor (Jacobs et al., 2013). Jacobs et al. (2013) indicated that the role of each generation and its varied working character, KM practices, and employee roles are unique to that generation and

could affect the success of KMS implementation. Leadership roles and the effective management of resistance to change played an important role in the change management process (Jacobs et al., 2013).

Permitting end users to experiment with a new system could ease uncertainties (Nwankpa & Roumani, 2014). Nwankpa and Roumani (2014) stated that by allocating time for end-users to identify the usefulness and become familiar with the functionalities of an ERP system, business leaders could facilitate acceptance in and comfort with the new software. The keys to a successful organizational change initiative are the practice of organizational learning, an information-rich and knowledge-intensive practice, and knowledge sharing within an organization.

Managers should adopt effective change management strategies, clear communication, and encourage acceptance of change to allow for successful system implementation. Holten and Brenner (2015) recognized that negative outcomes of organizational change are often associated with absenteeism, reduced productivity, job satisfaction, and stress. An additional result is the negative influence on an employee's time pressure. Given these undesirable outcomes, Holten and Brenner (2015) discovered that managers' change engagement styles influenced successful organizational change. Holten and Brenner (2015) stated that managers who involved followers, communicated clearly, shared knowledge, and discussed the implications of change were positive influences on organizational change. Business leaders should align the organizational change management strategies with the vision statement, mission statement, and the

organizational KM culture (Pandey & Dutta, 2013). The benefits of system implementation are important initiatives for an organization's development.

**Organizational Culture**

Organizational culture and KM enterprise systems are enablers used to assist with KM, capture, and dissemination. Zhang et al. (2005) recommended that researchers focus on the organizational culture as a potential cause of KMS failure implementation. Zhang et al. (2005) indicated that leaders have not considered the importance of organizational culture as a potential cause of KMS failure, and is a significant factor in achieving success when implementing an enterprise system. In a similar case study, Pandey and Dutta (2013) explained that, in an organization, its culture emerged as one of the most critical components of effective KM practice; such an element is also the most difficult obstacle to overcome. Pandey and Dutta (2013) indicated that the corporate mission, vision, and values, should be embedded within the KM culture to lead a successful change effort. Pandey and Dutta (2013) emphasized that technology was a key enabler in the knowledge infrastructure capability and are critical in the success or failure of a firm's KM initiatives. Regrettably, employees in many businesses have little or no understanding of how KM practices are key to cultivating KM culture in the organization.

When business leaders implement KM processes, knowledge workers would likely succeed, embrace, and foster its application of KM if it were part of organizational culture. Chang and Lin (2015) identified that cultures have positive influences on KM processes; these influences resulted in improved corporate efficiency, effectiveness, innovation, and customer service. Chang and Lin (2015) revealed five kinds of

organizational cultural dimensions: (a) results-oriented, (b) tightly controlled, (c) job-oriented, (d) closed system, and (e) professional-oriented. These dimensions were significantly associated with four kinds of KM processes: (a) creation, (b) storage, (c) transfer, and (d) application. Chang and Lin (2015) explained that organizations with results-oriented and job-oriented culture had a significant positive influence on the KM process implementation while organizations with a tightly controlled culture had a significant negative effect on the KM process implementation. When taking on a KM project and implementing change, leaders might recognize that organizational culture focuses on risk-taking, innovating, and challenging ideas (Chang & Lin, 2015). Business leaders who facilitate and embrace organizational learning and KM enable open communications and clear flow of information.

The importance of a knowledge sharing culture is critical when the cultures of organizations foster openness and knowledge exchange among its employees. Such as culture is comprised of developing managerial innovation capabilities, creating networks around strategic topics, and building collaborative systems, all of which promote innovation (Schneckenberg, 2015). Schneckenberg (2015) noted that the use of technological solutions, such as social network platforms, web conferencing tools, or other types of collaborative systems, was not sufficient to create innovation. Schneckenberg (2015) further stated that culture change processes that facilitate openness, knowledge sharing, participative decision mechanisms, silo-crossing collaboration at team levels, and open mindsets at the individual level, are all necessary

to promote creativity and innovation. Managers should determine a KMS implementation method that best aligns with organizational mission, structure, and culture.

**Factors Affecting Enterprise Systems Implementation**

The implementation of KMS is a daunting task that can be complicated if strategies are not conceptualized. Venugopal and Suryaprakasa (2011) indicated that critical factors to a successful portal implementation involved change management, business process reengineering activities, project monitoring and control, use of legacy system, and management support. Dara and Yadav (2013) noted that a holistic approach to a KMS implementation and a greater understanding of the process was lacking. Unless the right framework for successful implementation is developed and strategies are identified, business decision-makers will continue to experience difficulties in capturing intellectual property and outperforming competitors (Dara & Yadav, 2013).

Several researchers communicated with and involved the stakeholders in the ERP systems implementation (Aubert, Hooper, & Schnepel, 2013; Azad, Shadmanfard, & Zarifi, 2013; Tarhini, Ammar, Tarhini, & Masa'deh, 2015). Azad, Shadmanfard, and Zarifi (2013) indicated that leaders recognized the advantages of adopting an efficient ERP regardless of their company size or location. However, numerous business leaders acknowledged that implementing ERP systems involved success factors to reach full operational potential (Azad et al., 2013). Some factors could affect the ERP adoption: (a) intelligence information, (b) customer comfort, (c) structure oriented, (d) resource management, (e) flexible structure, (f) KM, (g) customer oriented, and (h) customer oriented (Azad et al., 2013). A critical success factor crucial for implementing ERP

software is the collaboration of all stakeholders because it can affect the organization's business processes, performance, and strategic planning (Tarhini et al., 2015). Additionally, the ERP project involves many operations and affects the entire organization such as (a) human resources, (b) financial management, and (c) manufacture management (Tarhini et al., 2015). Aubert, Hooper, and Schnepel (2013) believed that when implementing ERP systems, business leaders should employ a project manager and technical staff to communicate the goals and objectives of the organization to internal and external stakeholders.

Adopting an ERP software is a multifaceted process that encompasses more than just a software upgrade. Business leaders should strategically align their strategies, processes, and supply functions with the functions of ERP systems (Aubert et al., 2013). ERP system is a complex technology innovation (Ram, Corkindale, & Wu, 2013). Accomplishing a successful ERP system implementation can ensure that organizational leaders achieve sustainability and a competitive advantage in the marketplace (Ram, et al., 2013). Tarhini et al., (2015) were convinced that the success of an organization in ERP adoption involved the integration of business processes and collaboration with stakeholders. Narayanaswamy, Grover, and Henry (2013) explained that information systems projects are complex, and the IT or project manager must adapt to project challenges. An effective KMS influences business processes, provide value to organizational performance, and produce efficiency, productivity, and effectiveness within the business operations.

KMS are valuable tools to users because these types of systems enable KM practices within the organization. Valmohammadi and Ahmadi (2015) discovered several critical factors affected the organizational performance based on the balanced KM scorecard approach: (a) leadership role, (b) organizational culture, (c) strategy, (d) processes and activities, (e) training and education, (f) informational technology, and (g) motivation and rewards system. Valmohammadi and Ahmadi (2015) believed that the use of KMS is a fundamental supporting block of KM practices because they provide users a tool to record, capture, store, access, and transfer knowledge within an organization. Therefore, KM practices had an overall positive impact on the organization. Such positive influence highlighted the growth and learning dimension of KMS implementation strategies.

In addition to the KM scorecard, business leaders adapted the KM Assessment Tool. Jain and Jeppesen (2013) found that to assess the correlation of KM practices with leaders' cognitive styles, leaders used a KM Assessment Tool with five dimensions: (a) process, (b) leadership, (c) culture, (d) technology, and (e) measurement. Knowledge workers who utilized the KM Assessment Tool showed a positive relationship with KM leadership, culture, and measurement (Jain & Jeppesen, 2013).

In a similar study, De Toni, Fornasier, and Nonino (2015) indicated that users' acceptance, reliability, and perception of enterprise systems' quality impacted their use and longevity over time. The higher percentage of users, number of years since implementation time, reliability, and utility correspond to user acceptance (De Toni, Fornasier, & Nonino, 2015). Shehata (2015) noted the components that emerged as

critical success factors when deploying KMS were: (a) organizational learning, (b) learning styles, and (c) effective integration between KMS and organizational learning. When managers understand critical success factors of system implementation, these efforts drive firm performance.

Abdinnour and Saeed (2015) discovered that employees' perceptions about an enterprise system's capability, value, and timing were negative during preimplementation phase. However, their perceptions were far worse during the postimplementation phase. Abdinnour and Saeed (2015) believed that managing user perceptions and resistance of enterprise systems during the pre-implementation phase could be minimized. Garg and Chauhan (2015) revealed that the people factor, which includes education and training, change management, users' acceptance, and involvement in testing and troubleshooting, showed the most significant effect on the success of enterprise systems implementation. In addition, organizational factors such as top-level management support, the vision of the organization, business process reengineering, ERP product selection, and enterprise-wide communication plans, influenced the success of enterprise systems implementation. Garg and Chauhan (2015) explained that the success factors for the implementation of enterprise systems were the need for (a) a defined vision and business plan before the implementation, (b) a phased implementation as an IT strategy, (c) user involvement and education, and (d) ERP teamwork, scope and expectation management, communication, and budget control. Garg and Chauhan (2015) emphasized that these success factors could provide executives and IT managers the necessary insight on how to reduce failure rate of enterprise systems implementation. Overall, the authors (Garg & Chauhan, 2015)

proposed the value and nature of success factors in KMS implementation due to the complexity of enterprise systems and user expectation.

As organizational leaders continue to seek out new ways to compete, KM is an aspect to consider. KMS could be a factor in their decisions. Ramin et al. (2013) suggested that a successful KMS implementation included leadership support and change management processes. Similarly, communities of practice and technology infrastructure should be able to support the knowledge transfer within an organization (Ramin et al., 2013). Furthermore, Ramezani et al. (2013) explained that the distinct critical factors when implementing KM in an organization were the presence of an appropriate organizational culture and an existing system for knowledge documentation, recording, registration. Additionally, a motivational system for workforces (HR) and appropriate management and planning for KM realization are needed.

Although Ramezani et al. (2013) and Ramin et al., 2013 introduced critical success factors of KMS implementation, Behesti, Blaylock, Henderson, and Lollar (2014) recommended a different approach. Ramezani et al. (2015) indicated the critical success factors were: (a) current hardware and software infrastructures and standard executive processes in the KM field, (b) presence of specialized teams including expert personnel, (c) existing appropriate organizational architecture of KM and evaluation system, and (d) existing systematic relationship with beneficiaries of the research organization. Behesti et al. (2014) discovered that the implementation of an ERP system was instrumental in reducing redundancy and improving efficiency, productivity, and performance within an organization. Behesti et al. (2014) posited that the implementation of an ERP was a key

enabler in improving operational efficiency; it resulted in faster response rate to the customer needs of large, global manufacturing firms. Schniederjans and Yadav (2013) discovered that technology, organization, and environment framework integrated critical success factors and influenced system implementation. Schniederjans and Yadav believed that the proposed conceptual model provided a holistic approach to focus on organizational culture, change management, and trust between members of organizations.

Researchers attempted to describe the social aspect and interaction of end users in their adoption of enterprise systems (Grosswiele, Roglinger, &Friedl, 2013; Zhang et al., 2013). Zhang et al. (2013) evaluated several factors that influenced the use and acceptance of the ERP system in the organization. These factors included (a) training, (b) communication, and (c) subjective norm. Zhang et al. (2013) found that training had limited influence on the adoption of an ERP. Instead, effective communication strategy had a significant impact in user acceptance. Zhang et al. (2013) noted that communication should include face-to-face talks, newsletters, and guides to provide employees avenues to understand the new system and the changes the ERP would bring to their job. Understanding the ERP usability ideas must be a collaborative effort between the decision-makers, leadership, and the IT managers (to regulate the system components), while reducing negative impact on information and cost (Grosswiele et al., 2013).

Conversely, Norton, Coulson-Thomas, and Ashurst (2013) reported that the top critical success factor to a successful implementation of an enterprise system is senior management support involvement. Norton et al. (2013) also believed that the

identification of critical success factors (CSFs) would provide a pathway for business leaders to experience success with future implementations. Marciniak Amrani, Rowe, and Adam (2014) posited that business leaders needed to implement effective ERP system strategies. To improve business processes, organizational leaders should employ effective implementation strategies when upgrading software or adding new systems, as technological changes occur in the business environment (Marciniak et al., 2014). Although Marciniak et al. (2014) believed in effective system strategies, system inefficiency might be related to over-extended personnel resources, process breakdown, or system incompatibilities. Singer and Becker (2013) indicated that pertinent resources are tasked to sustain workflow system inefficiencies instead of improving systems. Over-extended resources have an impact on user content availability and create problems with the customer relationship. Effective integrated IT solutions allow for information and knowledge sharing capability as well as minimize system failure by capturing and retrieving the appropriate component knowledge (Motawa & Almarshad, 2013). Managers who understand the strategies of KMS implementation could direct all functions of an organization effectively (Marciniak et al., 2014; Motawa & Almarshad, 2013).

**Potential Themes**

In my review of literature, I saw common themes and insight about enterprise KMS implementation. KMS have the potential to add value to an organization if IT managers possess the tools and strategies for its successful implementation. Compared to similar technologies that an organization may implement, KMS engender greater user

involvement, acceptance, and organizational learning. As Zhang et al. (2005) indicated, the effect of employees' opinions about the usefulness of the system and strong social influence were much more powerful and had a greater impact than training or communication.

Likewise, a new KMS does not necessarily translate into an absolute solution for executives of an organization who are looking to improve its business process and competitive advantage. As Lupton and Beamish (2014) noted, the organizational leaders' communication and involvement in the knowledge sharing, and the importance of the role managers plays in facilitating, promoting, training, and practicing diffusion to promote interaction within the organization are critical in the success of KMS use.

Enterprise systems are beneficial to business leaders who are planning to stay competitive. Farzaneh, Vanani, and Sohrabi (2013) stated that investing in an ERP is a global phenomenon. Business leaders from multiple industries should gain insights and understand the benefits of new technologies and what ERP systems can offer their organizations to achieve competitive gain (Farzaneh et al., 2013). Farzaneh et al. (2013) concluded that the data and information from studies and other resources could help business leaders in the ERP planning and decision-making processes. Furthermore, Jenatabadi, Huang, Ismail, Satar, and Radzi (2013) posited that business leaders investing in ERP systems have the advantage of sharing real-time data and information. Jenatabadi et al. (2013) noted that organizational enhancements, such as ERP systems implementation, could support decision-making and align business processes to improve and facilitate a collaborative environment. Leaders from all types of organizations and in

all geographic regions should pursue successful implementation of KMS to facilitate storing and sharing of information and to improve business processes.

## Transition

In Section 1, I introduced the issues surrounding the lack of KMS implementation strategies and the problem encountered by organizations in terms of knowledge loss from departing employees resulting from lack of KMS. I established that the nature of the study required the adoption of qualitative method and a single case study design. I also discussed the research question, interview questions, conceptual framework, significance of the study, and literature review. In the literature review, I synthesized and summarized the works of some previous researchers relevant to the case study. Section 2 of the study covered the (a) restatement of the purpose statement, (b) role of the researcher, (c) research participants, (d) research method and design, (e) population and sampling, (f) ethical research, (g) data collection instruments, (h) data collection techniques, (i) data organization techniques, and (j) reliability and validity of the study. Section 3 contained the analysis of the data, findings, conclusions, reflections, and recommendations about strategy of successful KMS implementation.

# Section 2: The Project

Section 2 includes the role of the researcher, the study design, and a description of the strategies that IT managers use to develop and implement a KMS. This section also includes a reiteration of the purpose statement, participant selection, data collection instruments and techniques, data organization, and data analysis. Last, in Section 2, I present the means for assuring study reliability and validity.

## Purpose Statement

The purpose of this qualitative, single case study was to explore strategies that IT managers use to develop and implement a KMS. The target population was five IT managers in northwestern Florida because they were experienced in implementing a KMS. Data from the study may provide IT managers with strategies to allow social change because the implementation of a strong information and KMS may empower community leaders to collaborate within an infrastructure for sharing information.

## Role of the Researcher

As the researcher, my role was to identify and minimize any bias that may affect the collection and analysis of the data (Marshall & Rossman, 2014). I was the primary collection instrument for selecting participants, collecting and organizing data, classifying themes, and recognizing ethical issues such as confidentiality and biases. Before interacting with participants, I obtained approval from Walden University's institutional review board (IRB). I collaborated and interacted with the participants through semistructured, face-to-face interviews and collected secondary data from

documents and archival records pertaining to strategies of successful KMS implementation.

As a certified knowledge manager with 25 years of knowledge and information management experience, I have extensive knowledge about the topic. I did not have a current working relationship with any of the participants. The participants for the research were IT managers. Each of the participants was experienced in developing strategies to implement KMS successfully. Their successes generated my desire to explore and seek the knowledge of expert IT managers and knowledge workers who had extensive KMS implementation experience. Glowalla and Sunyaev (2014) conducted semistructured interviews with IT experts for strategic decision-making qualities to explore and discover strategies use when implementing ERP systems. Receiving knowledge from the experienced IT managers and knowledge workers may guide other IT managers in different organizations with less experience in different aspects of KMS implementation.

To ensure the research met ethical standards, I upheld the principles of the Belmont Report, which underlie all human research. The Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979) comprised an account of ethical values and instituted guidelines for the protection of humans. When followed, the precepts of the report safeguard participants and researchers. To protect the rights of human subjects, researchers may use different approaches, such as using an informed consent process or protecting the confidentiality and privacy of participants (Yin, 2014). I ensured that each participant signed an

informed consent form that covered elements such as potential risks and benefits, voluntary nature of the study, privacy, and confidentiality. The participants' identities and privacy remain protected with the use of unique identifiers and generic organizational job description information (e.g., IT Manager 1, IT Manager 2).

Moustakas (1994) suggested *epoché* or suspension of judgment to mitigate bias and minimize errors and bias in research. I had no preconceived notions (biases) while interviewing because the state of *epoché* prevailed. The role of the researcher also involves detecting and eliminating bias in the research process (Marshall & Rossman, 2014). To reduce bias, I used journaling as a tool to document the process of data collection and analysis, and I identified preconceptions that may have influenced research results.

I conducted semistructured interviews using an interview protocol that included the interview questions (see Appendix A). Foley and O'Conner (2013) recommended that to help achieve commonality, consistency, and reliability, qualitative researchers rely on interview protocols. My use of an interview protocol (see Appendix C) and National Institutes of Health (NIH) certification ensured that each participant received the same standardized approach based on guidelines for the protection of human subjects. The interview questions functioned as initial prompts. Some participant responses required further prompting. Marshall and Rossman (2014) and Yilmaz (2013) indicated that researchers use a list of questions as the guide for further probing once the interview activity begins. I used the interview protocol found in Appendix C as a guide during the interview process to prevent overlooking or averting any necessary steps.

## Participants

The eligibility requirements for participants in this study included the following criteria: (a) participants must have been from a small-sized organization located in northwestern Florida, (b) participants must have been employed with the organization from 2007 to 2012, (c) participants were members of the KMS implementation team, and (d) the participants were at least 18 years of age. The participants' personal experiences provided insight and helped me comprehend the details surrounding my research questions and problem. Yin (2014) stated that a specific sample size is not established or critical for case study designs. Instead, a researcher's confidence in the findings will establish the sample size (Trotter, 2012). In addition, Guest, Bunce, and Johnson (2006) noted that data saturation for qualitative research is achievable with small sample sizes. Interviews with important stakeholders provide a holistic dataset and limit alternate interpretations (Yin, 2014).

The strategy for gaining access to participants involved snowball or chain sampling—a form of purposive sampling (Patton, 1990). Snowball or chain sampling allows researchers to gather information-rich cases through the identification of an index person who provides names of potential participants or typical cases (Patton, 1990; Robinson, 2014; Trotter, 2012). Based on my membership with the Air Force Association, I gained access to a publicly available list of attendees and communications experts at a cyber security conference regularly held in National Harbor, Maryland. Through phone conversations with these experts, I was provided a list of referred participants who were experienced IT managers and who successfully implemented a

KMS in northwestern Florida. In snowball or chain sampling, researchers select participants with the potential for detail-rich responses because of the knowledge, experience, and relevance to the research topic that the participants bring (Masso, McCarthy, & Kitson, 2014; Patton, 1990). I purposively selected the five participants for interviews based on their involvement in a KMS implementation.

Establishing a working relationship with participants should include processes and principles of Rubin and Rubin (2012), Yilmaz (2013), and Yin (2014). The strategies and processes for establishing a working relationship with participants began with e-mail exchanges and followed by telephone conversations. I assessed participants' characteristics based on their experiences and involvement in a successful KMS implementation. The selection of the participants who matched the case study profile and criteria were based on the reference list provided by the IT managers and communications experts from the cyber security conference.

## Research Method and Design

Several research methods and designs are available to researchers. The problem that I described in this study was the loss of organizational knowledge if it was not adequately captured in a KMS; this loss could create a knowledge gap as well as a potential profit loss for businesses (Massingham, 2014). Qualitative research was appropriate for explaining what, where, why, and how issues occur with individuals and organizational processes; this type of research allows access to a participant's view of a phenomenon (Marshall & Rossman, 2014; Yin, 2014).

## Research Method

Three research methods commonly used by researchers are qualitative, quantitative, and mixed methods (Baxter & Jack, 2008; Denzin & Lincoln, 2011; Marshall & Rossman, 2014). I chose a qualitative research method for this study instead of quantitative or mixed methods to allow flexibility and documentation of findings when participants' views and experiences were relevant (see Denzin & Lincoln, 2011; Myers, 2013). Qualitative researchers use open-ended questions and observations to build themes that help them interpret any implications of the data (Yin, 2014). Interviews and document review are essential to triangulating participant behavior, opinions, and views. Thus, a qualitative method was the most feasible for my research. A researcher's experience and knowledge could help in understanding the resultant underlying themes and are key components of qualitative research (Trafimow, 2014). A qualitative method was most appropriate for exploring strategies that IT managers used for KMS implementation.

Neither a mixed-methods approach nor quantitative methods approach was appropriate for my study. In contrast to qualitative studies, a quantitative method does not allow for flexible exploration of strategies within a given case (Yin, 2014). By stating hypotheses in advance, researchers employ quantitative methods to test theories as they examine relationships between dependent and independent variables (Baxter & Jack, 2008; Bettany-Saltikov & Whittaker, 2014). The quantitative research method was not appropriate for my study because I was not using questionnaires, testing theories, or examining relationships. Amayah (2013) used questionnaires and multiple regression

techniques to investigate motivators, enablers, and barriers to understand knowledge sharing; these techniques were not part of the focus in my study. The focus of my study was to explore strategies for KMS implementation based on participants' experiences.

Mixed-methods studies include a combination of qualitative and quantitative methods to study a phenomenon where variables (either sequentially or concurrently) are present in a single study (Denzin & Lincoln, 2011; Mayoh & Onwuegbuzie, 2013; Ozawa & Pongpirul, 2014). Accordingly, a mixed-method approach was not appropriate for my study because there my study did not have quantitative variables. Therefore, a qualitative method was most appropriate to explore the themes and implications of data relating to strategies of KMS implementation.

**Research Design**

Researchers who choose a qualitative methodology could use one of the several types of research designs including phenomenology, ethnography, and case studies (Moustakas, 1994; Scarduzio et al., 2011; Taplay, Jack, Baxter, Eva, & Lynn, 2014; Tomkins & Eatough, 2013). My research design was a single case study. For my study, this design was most appropriate to answer the research questions. I chose this design because, as a researcher, I had the opportunity to explore the strategies that IT managers used for KMS implementation. Zhang et al. (2005) theorized that case studies are appropriate when evaluating information and implementation of KMS. Researchers using case studies explore single or multiple phenomena and may involve observation of participants in their natural settings to understand how, what, and why the phenomenon has occurred (Yin, 2014). By using a single case study method, I gained insight into the

*how*, *what*, and *why* of the phenomenon relating to strategies of KMS implementation. My goal was to explore the *how*, *what*, and *why* of a condition (see Yin, 2014) at one point in time.

Other designs that were available were phenomenology and ethnography. Phenomenology is an approach and manner of thinking about things that involves observation of personal and lived experiences, as well as interaction with the participants as they describe their individual experiences (Ivey, 2013; Moustakas, 1994; Tomkins & Eatough, 2013). Phenomenology did not fit my study because my purpose was not to observe the personal and lived experiences of the participants, but instead to explore the participants' real-world experiences. Scarduzio et al. (2011) described ethnographic design involving the long-term study of a group by sense making and storytelling. The goal of my study was to explore the *how* and *why* of KMS implementation at one point in time and did not involve a group's storytelling and long-term study. A long-term approach using an ethnographic design was not appropriate for the study.

To ensure data saturation, a researcher engages with the participants by using probing questions through semistructured interviews, document collection, and screening. Morse (2015) indicated that data saturation is reached through triangulation when interviews and documents no longer provide new or additional information. Guest et al. (2006) stated that for qualitative studies, data saturation might be possible with a small sample size of participants and when the documents no longer offer new or additional information. Ando, Cousins, and Young (2014) suggested that a sample size of six participants is adequate for developing themes leading to saturation. Similarly, Thomas

(2015) studied two IT leaders based on predetermined criteria that ensured data adequacy. Therefore, there is no firm or exact number of participants in a case study to achieve data (Yin, 2014).

## Population and Sampling

The sampling population for my study comprised of Department of Defense civil service and contractor employees from one organization in northwestern Florida. The population for the study consisted of five participants: two IT managers with business process and requirements analysis specialization and three IT managers with SharePoint specialization. The sampling method for the study was snowball or chain sampling. Snowball or chain sampling is a strategic process using identified research informants within a select target population to disclose other potential participants for the research study (Miles, Huberman, & Saldana, 2013; Patton, 1990). Snowball or chain sampling is particularly useful when the research population is difficult to locate (Elo et al., 2014). Therefore, by choosing snowball or chain sampling, a form of purposive sampling, I had access to participants who met the predetermined criteria. Masso et al. (2014) and Patton (1990) explained that snowball or chain sampling allows a researcher to select participants who might offer detail-rich responses, based on knowledge, experience, and relevance to the research question. Likewise, Robinson (2014) noted that snowball or chain sampling involves the notion that the researcher's knowledge of the population may be used to select and target specific participants to include in the sampling. I used snowball or chain sampling technique to gain access to a group of experienced participants who possessed the predetermined criteria for this case study.

Marshall, Cardon, Poddar, and Fontenot (2013) studied approximately, six to 10 participants for qualitative case studies. Similarly, Shoup (2015) used a snowball or chain sampling with seven participants in the case study involving patients' fulfillment strategies during an altering healthcare setting. Thomas (2015) also used a snowball sampling of two IT leaders based on predetermined criteria to ensure data adequacy. Moreover, no firm or an exact number of participants exists in a case study to achieve data saturation (Yin, 2014).

Elo et al. (2014) reemphasized data saturation as the point at which the data collection process no longer offers any new or relevant information. Guest et al. (2006) explained that achievement of data saturation is when no new information emerges in the research and can be achieved with a small sample size sharing the same information. Fusch and Ness (2015) posited that a researcher achieves data saturation when no new coding, themes, and information are introduced, and the researcher can replicate the result. To ensure data saturation, I performed member checking by conducting semistructured interviews with participants until I reached a point where no new data or themes emerged.

This qualitative, single case study involved five IT managers who met the predetermined criteria and provided detailed perspectives *vis-à-vis* my central research question. Demonstrating the criteria for selecting participants was an elemental part of showing that participants had the appropriate knowledge and experience to offer valuable insights on the research topic (Thomas, 2015). The eligibility requirements for participants in the study included four criteria: (a) participants must have been from a

small-sized organization located in northwestern Florida, (b) participants must have been employed with the organization from 2007 to 2012, (c) participants were members of the KMS implementation team, and (d) participants were at least 18 years of age.

Robinson (2014) suggested that one-on-one interviews facilitate deeper exploration of subjective and sensitive topics because such interviews allow participants to provide in-depth responses to research questions. These interviews allowed me to gain an understanding of the strategies that IT managers used to develop and implement the KMS, also known as Enterprise SharePoint Portal, from participants' perspectives. I conducted the semistructured interviews, after participants had their assigned office hours, at a location selected by the participants other than their regular offices. I explained to participants that any information provided (i.e., responses to interview questions) would be kept confidential. I assured participants that I would not use their personal information for any purposes outside this research study. In addition, I did not include their name or anything else that could identify or link them in this study's report(s). Case studies with interviews are usually held at a mutually agreeable location (Covell, Sidani, & Ritchie, 2012; Yin, 2014). When conducting semistructured interviews, researchers should select a setting in which the participant feels safe to share his or her experiences (Anyan, 2013; Doody & Noonan, 2013). The interviews occurred at a mutually agreed time and ensured the comfort of the participant, to avoid interruption and to protect the privacy of the participant.

## Ethical Research

Ethical issues may appear while conducting qualitative studies (Gibson, Benson, & Brand, 2013; Mitchell & Wellings, 2013). Rubin and Rubin (2012) suggested that researchers should follow the informed consent process to reveal all aspects of a qualitative research study to participants. To ensure an ethical approach to this study, I ensured the participants' confidentiality and transparency.

Participants were assured that they were free to participate if they so wished; however, procedures would be in place if they choose to withdraw from the study. By obtaining informed consent, ensuring confidentiality, and protecting participants' rights to privacy, I mitigated any potential harm to the participants (Goyal, Rahman, & Kazmi, 2015). To accomplish objectives, such as obtaining informed consent, ensuring confidentiality, and protecting participants' rights to privacy, I put into place several procedures including a withdrawal option. These procedures were: (a) the study contained a consent form, as required by the Walden IRB, to promote ethical clarity, (b) by signing the consent form, participants declared their commitments to participate, (c) I articulated a withdrawal option for the participants so that they could exit the interview at any time, and (d) each participant received an explanation of the withdrawal option during a phone call, in an introductory email, and on the consent form. Randall-Arell and Utley (2014) recommended that withdrawal may be established via telephone, e-mail, or refusal to answer any interview question. Participants understood they could submit an email or any other form of communication to me to withdraw from the study. I explained that each participant could withdraw from the

study before, during, or even after the interviews were completed. One of the IT managers who agreed to participate in this study withdrew after signing the consent form because of illness. I will maintain the file of this one participant who was not able to participate along with other participants who participated during this research process for a minimum of five years. After that time, I will destroy all evidence of participation.

No incentives or rewards were offered to the participants. A password-protected external hard drive solely under my control contains the interview data and document analysis. Only I have access to the data and know the identities of the participants. By keeping participants' identities confidential, I am also protecting the information they provided (Mitchell & Wellings, 2013). In addition to the password-protected hard drive, I stored the completed consent form of each participant in a locked filing cabinet for five years. After five years, I will destroy all recordings and interview notes related to the participants by shredding or deleting. I obtained approval from the Walden University IRB to comply with ethical requirements before I conducted the interviews.

The study appendices relevant to ethical research included an interview question form (see Appendix A), Walden University IRB approval memorandum (see Appendix B), consent form, and interview protocol) (see Appendix C). The case study file included (a) a unique identifier for each participant's personal information, (b) interview data, (c) documentation review data, and (d) my data interpretation documents for member checking. Confidentiality and anonymity are crucial to present the findings of the research to ensure all participant privacy (Killawi et al., 2014). Participants received identifiers in the form of IT Manager 1, IT Manager 2, and so forth.

## Data Collection Instruments

The researcher is the principal data collection instrument in a case study; he or she utilizes interviews, document analysis, and other means as active conduits in conducting the study (Houghton, Casey, Shaw, & Murphy, 2013; Marshall & Rossman, 2014). Therefore, I was the primary data collection instrument for this study. A detailed review of documentation and semistructured interviews helped me discover underlying themes in this study (St. Pierre & Jackson, 2013).

### Semistructured Interviews

Glowalla and Sunyaev (2014) conducted semistructured interviews with IT experts to explore and discover strategies when implementing ERP systems. Six semistructured interview questions served as a tool for data collection in this study. Morse (2015) posited that a systematic approach to the interview question process also enhances the reliability and validity of a study. Six open-ended interview questions helped me gain insights into the perspectives of the participants regarding strategies that led to them to successful KMS implementation. Yin (2014) suggested a replicable process to support reliability. Hence, by utilizing the same list of questions for each participant during the semistructured interviews, internal consistency was promoted and a semistructured interview protocol are recommended when a researcher desires to follow a prearranged list of questions in a conversational format (Yin, 2014).

### Documentation

Multiple data sources supported by relevant research, experience with a case study, and an audit trail all promote validity in a study (Reddy, 2015; Yin, 2014).

Supplemental data sources for the study were publicly available documentation. I gathered additional documentation that participants were willing to share after the interview. I conducted systematic Internet searches for other pertinent documents relating to the participant's organization through websites, fact sheets, and marketing brochures. By conducting such systematic Internet searches, I uncovered pertinent supporting documents for participant responses. Documentation is helpful in supporting and verifying evidence from other sources (Yin, 2014).

I maintained reliability and validity in the study by using the interview protocols and relevant documentation. Yin (2014) indicated that researchers used an interview protocol when conducting a study. I documented the snowball or chain sampling list of participants for confirmability. Houghton et al., (2013) stated that in qualitative research, the researcher could enhance credibility by using triangulation to confirm and ensure data were complete. I used data triangulation through document analysis and participant interviews. Diverse participants promote validity and methodological triangulation in a case study (Heale & Forbes, 2013; Morse, 2015). I interviewed participants with different levels of managerial skills to establish diversity in the skill set.

Rubin and Rubin (2012) identified several related facts to support a reliable, valid, systematic data examination. Member checking is an important part of a qualitative study because it enhances the reliability and validity of the research (Simon & Goes, 2013). The standardized format of the interview questions, follow-up questions, member checking of interviews and use of documentation analysis (Houghton et al., 2013; Yin, 2014) warrant transferability and confirmability of the study. I ensured confirmability by

disclosing to participants the purpose, data, and processes of the study. To maintain reliability and validity in this study, I kept an audit trail and provided full disclosure of interview transcripts and data interpretation to participants. By following the interview protocol (see Appendix C), I conducted semistructured interviews using a semistructured interview protocol and asked the same interview questions (see Appendix A).

## Data Collection Technique

The process I used for collecting participant data included face-to-face semistructured interviews with an interview protocol (see Appendix C). An LGV10 digital voice recorder recorded the participants' responses for later transcription. I asked each participant for permission to use the digital recording device during the interview. Other tools I utilized during data collection included a notebook to take notes, mechanical pencils for note taking, an LGV10 cellular phone with the voice recorder to archive electronic voice and text files securely, and a watch to monitor the time as a courtesy to participants during the interview.

### Semistructured Interviews

The initial contact with participants, via email and telephone included a brief overview of the study, a request to participate, and a description of the semistructured interview procedure. Once each participant confirmed participation, I made an appointment for the interview, sent the participant the consent form, and requested that the participant read and sign the form electronically before the interview. The email notified participants that they could reschedule the interview or withdraw from the study at any time. The email also included the interview questions to help participants prepare

for the interviews. Participants also received information regarding the use of interview protocol (see Appendix C), which served as the guidepost throughout the interview process. Each participant reviewed, signed, attached the scanned form, and replied to my email.

Data collection processes involved face-to-face open-ended questions and semistructured interviews using a semistructured interview protocol to enhance the research technique (Myers, 2013; Yin, 2014). The semistructured interview began at the agreed upon time and at the prechosen location. The interview started with an overview of the study. The LGV0 voice recorder facilitated the digital recording of the interviews. Using the same list of six questions, and using a semistructured interview protocol technique, I maintained internal consistency. Yin (2014) stated that case study interviews were focused and usually required only an hour. The duration of each session was 15-30 minutes. After each interview, I verbally summarized my notes to each participant. Each participant approved and validated the summarized content of my data interpretations. Thereafter, I sent the recorded interviews to a professional transcription service to transcribe the interviews. The person at the professional transcription service signed a letter of confidentiality agreement (see Appendix D) before I utilized his or her services. Finally, each participant received the written summary of my data interpretations and the transcribed interview for member checking.

The advantage of using a semistructured interview protocol technique was to capture important aspects of participants' views, experiences, perceptions, and thoughts (Baxter & Jack, 2008). A semistructured interview protocol technique allowed for more

in-depth data collection and comprehensive understanding of KMS implementation. In addition, information gathered from interviews supplemented other collected documentation. A detailed review of documentation and interviews provided a thorough construct of data collection for triangulation (Heale & Forbes, 2013). Denzin and Lincoln (2011) posited that researchers collect data systematically and interpret data obtained from interviews or observations. The semistructured interview technique was advantageous to the study because I could achieve in-depth explanations of beliefs and experiences from the participant's perspective relating to KMS implementation.

The semistructured interview technique had disadvantages. Trust was the groundwork for the researcher and participant to establish rapport, and implied that the interview setting was safe and comfortable for the interviewee to share personal information (Yin, 2014). Other major disadvantages of face-to-face interviews are time, cost, travel, and scheduling conflicts because interviews can be expensive and time-consuming (Doody & Noonan, 2013).

**Documentation**

Another data collection technique I used to gather participant data included collecting documentation to corroborate data from interviews. A detailed review of documentation helped me discover underlying themes and categories (St. Pierre & Jackson, 2013). Documentation such as written policies, standard operating procedures, business rules and best practices manuals, and brochures helped me develop a deeper understanding of the strategies involved in the successful KMS implementation.

Gathering additional documentation had several advantages. Documentation is stable and can undergo repeated reviews at the convenience of the researcher (Yin, 2014). Researchers might be able to review documents repeatedly and have access to the behind the scenes look at a program. In certain cases, a participant might be unable to articulate or did not recall relevant information during an interview unless written documents were reviewed (Rubin & Rubin, 2012). Researchers might have access to a reliable source of background information and could discover information that might not have been noted or available during the interview. Documentation might include quality and very detailed information to help researchers with the topic in question. Managers might store documents in an electronic repository such as a database, for convenient storage or retrieval whenever needed (Levy, 2011).

The disadvantages of using documentation might include limited access. Yin (2014) indicated some crucial documentation might not be readily available because they were not stored electronically. If the documents were in paper form, access could be withheld. Yin (2014) also noted that it might be time-consuming for researchers to collect, review, and analyze many documents because the documents might cover a long span of time, and many events or settings.

Simon and Goes (2013) stated that member checking is a participant validation technique to ensure credibility and accuracy. After the face-to-face interview with the participants, I had the interviews transcribed using a third party professional transcription service. Then I reviewed the relevant documents. Each participant had the opportunity to review the transcripts and my interpretations to ensure accuracy and validity.

Each participant received the transcribed interview and my data interpretations for member checking. Researchers might use member checking to provide participants an opportunity to add new or additional information on the issue under study (Houghton et al., 2013). Marshall and Rossman (2016) explained that participants could elect to either agree or disagree that the summarization accurately manifests their views and experiences. Once the participants reviewed the transcribed interview, they accepted and concurred with the contents of my script.

## Data Organization Technique

The data collection instruments for the research included semistructured interviews and documentation. The systems for keeping track of data included an LG-V10 Voice Recorder, Audacity for Windows audio recorder software, a journal, several notepads, and NVivo 11 qualitative data analysis software. After ensuring I had a signed consent form for each participant, I audio recorded the interviews. I organized the data using a reflective journal to protect those hand-transcribed and recorded notes. I analyzed and synthesized the data from my notes. I used NVivo 11 qualitative data analysis software to file, store, and organize the data to allow its quick access and manipulation (Houghton, Casey, Shaw, & Murphy, 2013). An electronic repository, such as a database or Universal Serial Bus (i.e., USB flash drive), is a popular and convenient method of storing information; moreover, information is readily available and can be retrieved when needed (Levy, 2011). I organized the data according to categories and themes, and participant responses to the research questions. With qualitative data analysis, the researcher was required to recognize emergent themes from (a) the literature review and,

(b) data collection. Coding was the finding of themes from text (St. Pierre & Jackson, 2013). Gajic, Stankovski, Ostojic, Tesic, and Miladinovic (2014) used coding to identify new categories, themes, or theoretical concepts during the data organization process in a qualitative study involving critical factors to implement a successful ERP system. To develop codes and identify themes, several approaches are available to researchers: coding data by recognizing segments of data and designating names to them, grouping codes into broader categories, and analyzing the categories through text, graphs, charts, or graphics as appropriate and eliminating redundancies (St. Pierre & Jackson, 2013).

Raw data will remain in a safe storage for 5 years before being destroyed by me. The completed consent form for each participant, scanned and written data from participants, and other documentation were stored in a password-protected external hard drive and locked filing cabinet for a minimum of 5 years, and will be destroyed as required by the university. After 5 years, I will destroy all recordings and interview notes related to participants by shredding and deleting.

## Data Analysis

In qualitative research, structured analysis was the process of analyzing data to discover patterns (Reynolds, 2014). I used methodological data triangulation for this study. Houghton et al. (2013) stated that in qualitative research, the researcher could enhance credibility by using triangulation to confirm data and to ensure data are complete. The methodological triangulation consisted of data collected from face-to-face, semistructured interviews, which included recorded and transcribed interviews and additional documentation. Methodological triangulation in a case study involves the use

of several methods of data collection to promote validity (Heale & Forbes, 2013; Morse, 2015). For a proper analysis of data, I used Yin's (2011) five-phase logical and sequential process: a) compiling, (b) disassembling, (c) reassembling, (d) interpreting, and (e) concluding.

**Compiling**

I compiled all the data collected from the semistructured interviews, additional documentation from the participants, and publicly available documents from the company website. I organized the data by separating similar ideas in groups. By organizing the data, I could sort according to categories and themes based on participant responses to the research questions. To categorize the data, I examined the transcripts and memos, and listened to recorded interviews, as my approach to become familiarized with the data. To generate the initial code from the preliminary analysis, I organized the data into similar categories or ideas into groups, and connected the themes. Coding was the discovery or creation of themes from the text (St. Pierre & Jackson, 2013). I used NVivo 11 qualitative data analysis software because it presented numerous functions—including querying and theme identification—that were not available via manual analysis. The identification of applicable categories or themes in interviews and document permits researchers to merge evidence (Reynolds, 2014). NVivo software is a product that can assist researchers with managing and analyzing data (Rodik & Primorac, 2015). This process helped me search for themes.

**Disassembling**

Once I determined, labeled, and established codes to show patterns, I identified themes and descriptions, and disassembled the data to create broader groupings. The discovery of broader groupings allows researchers to combine evidence (Reynolds, 2014). After separating the data into groupings and assigning names to the groupings, researchers combine codes into broader categories, and finally, present an analysis of the categories through text, graphs, charts, or graphics (St. Pierre & Jackson, 2013). Yin (2014) found that categorization of narratives allowed for data mining and organization of themes via tables or figures.

**Reassembling**

After I disassembled the data, I reassembled and regrouped the data into themes and broader groups. The intent was to synthesize the data and understand the strategies IT managers used to develop and implement successful KMS. Using a qualitative methodology requires openness to interpretation, analysis, and varied possibilities of presentation (Reynolds, 2014; Yin, 2014). In this phase, I eliminated redundancies and summarized emergent themes in the responses and case documents. Qualitative data analysis allows a researcher to explore possible themes that occur in data collection (Miles et al., 2013). I used NVivo11 software to help me with the querying, sorting, and arranging of the different data elements into various themes.

**Interpreting**

After reassembling the data into themes, I interpreted the information. The NVivo 11 analysis software allowed me to discover themes that I might have missed if I were to

have used manual codification and categorization. I evaluated the emergent categories and themes from transcripts, documentation from the participants, and from organizational websites. I converted the data to narratives to summarize the themes that existed in the raw information, to allow for comprehensive review. By following the methods described by Reynolds (2014), Verdonk, Räntzsch, de Vries, and Houkes (2014), and Yin (2014), could present a high-quality analysis and evaluation, and produce a report.

**Concluding**

Once I analyzed the data, I compared the thematic findings to the themes I discovered during the literature review and arrived at a conclusion. Part of arriving at a conclusion was the ability to compare my findings and understand the conceptual framework. The interview questions and document analysis allowed me to discover and connect themes related to the conceptual framework of the study.

Because I interpreted the elements of dynamic capabilities theory, I reviewed Chang et al.'s (2015) explanation of the theory, based on a resource-based view that evaluated an enterprise's current resources, and I determined that this theory did not support this study's implementation strategies. In comparing the themes, I also discovered that the Bass theory of leadership, although a unique connection that existed between leaders and followers were reported by Birasnav (2014), did not support the study. I compared my findings to the conceptual framework, understood how the fundamental concepts from the organizational knowledge creation theory, and composed the essential elements of knowledge creation, as reported by Nonaka et al. (2006). After

analyzing the data and comparing the findings with related theories, I developed conclusions and explored how training, customer focus, policy and governance, leadership and management support, and communication and marketing strategies were factors that supported the strategies for successful KMS implementation.

## Reliability and Validity

Yin (2014) indicated that researchers might evaluate the quality of research design based on four tests. Testing for reliability shows repeatability of test procedures, such as data collection methods. Validity testing includes external and internal validity measures (Yin, 2014). Thomas and Magilvy (2011) explained that researchers establish rigor to prove trustworthiness. To demonstrate rigor, researchers should establish consistent methods to replicate a study thereby establishing credibility, transferability, dependability, and confirmability of research results (Thomas & Magilvy, 2011).

### Dependability

Researchers who conduct qualitative studies focus on dependability to demonstrate the trustworthiness in their research (Marshall & Rossman, 2014). Marshall and Rossman (2014) explained that dependability is a crucial factor in conducting research, and researchers should include mechanisms for ensuring dependability. Yin (2014) emphasized that case study protocols and databases are appropriate for researchers to demonstrate dependability. Choudhari, Adil, and Ananthakumar (2013) theorized that the value of adopting a case study protocol in analyzing the decision and strategic choices ensure dependability. I followed the guidelines of a case study data protocol (see Appendix C) to ensure the dependability of the study findings. I developed and followed

a case study protocol (see Appendix C) that included (a) an overview of the study, (b) a brief description of the protocol purpose, (c) a description of the data collection process, (d) a case study report outline, and (e) a list of the research questions. Additional components of the case study protocol included a summary of techniques and data analysis tools. I created and maintained a case study files for the study of strategies IT managers use to develop and implement KMS. The case files contained (a) interview notes, (b) copies of transcripts, and (c) initial and drafts copies of the study findings. Using the case study files enhanced the dependability of the study by providing other researchers or investigators with insight into the resources, data, and products used to support the findings (Yin, 2014).

**Credibility**

Simon and Goes (2013) stated that member checking is a participant validation technique to ensure credibility and accuracy, and aids in establishing trustworthiness. Approaches for establishing credibility include member checking, triangulation, and constant observation (Houghton et al., 2013). For member checking, the objective is for participants to provide feedback after a detailed review of interview transcripts and the inferences the researcher makes from the data (Thomas & Magilvy, 2011). Through member checking, I could confirm the accuracy of the gathered interview data. Member checking is a technique that aids researchers to achieve credibility, validate accuracy, and give completeness regarding participants' responses (Acharya, Prakash, Saxena, & Nigam, 2013; Simon & Goes, 2013). Member checking allows participants to capture exact responses and meaning (Houghton et al., 2013).

Houghton et al. (2013) indicated that researchers could enhance credibility by using triangulation to confirm data and to ensure data are complete. Data collected from face-to-face semistructured interviews included recorded and transcribed interviews, and additional publicly available documentation that were included in the comprehensive data analysis. Methodological triangulation in a case study involves the use of several data collection methods to promote validity (Heale & Forbes, 2013; Morse, 2015).

**Transferability**

To ensure the integrity of qualitative research, researchers implement transferability (Marshall & Rossman, 2014; Singh, 2014). Transferability in qualitative research refers to the detailed descriptions of the population studied, sources of evidence collected, demographics, and boundaries of the study (Thomas & Magilvy, 2011). From the perspective of qualitative research, transferability is a responsibility of the researcher (Houghton et al., 2013). I kept a detailed and accurate record of the steps I followed in the study framework and maintained an audit trail. I presented detailed descriptions of the sampling criteria, document review, and interview protocol to enable duplication and transferability of the study. Furthermore, the participants offered rich data for the study that allowed interpretation of the findings for possible transferability to other similar perspectives.

**Confirmability**

Confirmability is the extent to which research outcomes are confirmable by others and whether the data collected supports the research findings (Venkatesh, Brown, & Bala, 2013). Houghton et al., (2013) and Kemparaj and Chavan (2013) recommended

maintaining an audit trail as a method of demonstrating the development of each decision and strengthening the confirmability of a study. I kept an audit trail to provide full disclosure of interview transcripts and data interpretation to participants to maintain confirmability in the study. Cope (2014) reiterated that an audit trail is essential to qualitative research to improve and uphold confirmability of a study. Throughout the research process, I maintained an audit trail to document my actions during the collection, analysis, and presentation of data. Additionally, Berger (2013) emphasized that using various methods when maintaining an audit trail would facilitate researchers with an innate understanding and familiarization. Berger (2013) further stated that when employing multiple tools to maintain an audit trail, a researcher should use source triangulation comprising audio recorded interviews, transcriptions, observation, and organizational documents to ensure rigor. During the data collection process, I kept a record of all sources I used, such as audio recorded interviews, transcriptions, observation, organizational documents, and notes of my personal views. As suggested by Cope (2014) and Berger (2013), I used an audit trail and multiple methods of maintaining evidence of audit trail to improve confirmability of the study.

**Data Saturation**

A researcher achieves data saturation when no new codes, themes, or information are introduced, and he or she can replicate the results (Fusch & Ness, 2015). Morse (2015) explained that data saturation is reached through triangulation when interviews and documents no longer provide new or additional information. Elo et al. (2014)

emphasized that data saturation is the point at which the data collection process no longer offers any new or relevant data.

## Transition and Summary

In Section 2, I introduced the methodology and strategies of the study and restated the purpose statement. I justified the use of qualitative single case study design as the most appropriate for the study. I also discussed the role of the researcher and the criteria for the selection of participants. Furthermore, I explained the research method and design, population and sampling, ethical research, data collection instruments, data collection techniques, data organization techniques, and reliability and validity of the study. Section 3 contains the findings, application to professional practice, and implications for social change. In Section 3, I also discuss recommendations for actions and further studies, and I offered reflections on the study.

Section 3: Application to Professional Practice and Implications for Change

## Introduction

The purpose of this qualitative, single case study was to explore the strategies that IT managers used to develop and implement a KMS. The population for this study consisted of five IT managers from a small-sized organization in northwestern Florida. I gathered data for this single case study from semistructured interviews and additional documentation. NVivo 11 software served as the tool to organize, code, and group data into themes. Based on methodological triangulation of interview data and documentation review, six thematic categories emerged to allow for adequate discussion of the strategies that the IT managers used to implement a successful KMS.

## Presentation of Findings

This single case study included one overarching research question: What strategies do IT managers use to develop and implement a KMS? I found six main themes from the analysis: (a) training, (b) customer focus, (c) policy and governance, (d) leadership and management support, (e) communication and marketing, and (f) business process management. During the analysis, I found that the aforementioned themes confirmed the phenomenon focused on the strategies of successful KMS implementation. Vaismoradi, Jones, Turunen, and Snelgrove (2016) wrote that researchers find related themes that encompass a phenomenon under study during analysis.

### Emergent Theme 1: Training

The first theme to emerge from participants' responses was the power of user training as a strategy that the IT managers used to implement a KMS. All five participants

pointed out that user training was the key to their projects' success. Training enabled users to recognize and appreciate system benefits.

When users receive appropriate training, they are more open to adapting or accepting system usage (Keong et al., 2012). Participants explained that training should be customized based on the users' abilities and needs, such as awareness and basic and advanced training. IT Manager 3 also noted that employing different training techniques based on the aptitude or technological familiarity of users was essential due to a generational gap. IT Manager 2 explained that training delivery techniques were created to support geographically separated users. IT Manager 5 noted that training and education were part of the adoption process, not only to learn the technology, but also to ensure a change occurred in business practice. IT Manager 6 added that training techniques and training delivery consisted of classroom lecturing or hands-on experience by stating, "We developed robust training programs that reached across the command at all levels." Some training was supplemented with computer-based training or user involvement. IT Manager 1 also noted that the creation of policies was helpful, especially for new customers or new employees, so that they could easily follow directions on how and when to use the KMS. Based on the IT managers' testimonies, training played a major role in their teams' successful KMS implementation.

**Emergent Theme 2: Customer Focus**

The second theme to emerge from participants' responses was customer focus. IT Managers 5 and 6 noted that one of the key strategies used to successfully implement a KMS was to ensure that customers were provided with the appropriate level of training

and prompt customer support when needed. IT Manager 1 emphasized that managing and providing seamless customer support played a key role in the implementation: “We developed a framework that identified what the customers needed, and from that, we organized the department into towers and how to serve the customers.” Kim, Cavusgil, and Cavusgil (2013) theorized that during the deployment and adoption of ERP systems, the focus of IT managers on customers might influence the elimination of key barriers and user resistance. Creating, maintaining, and building a long-lasting relationship with customers may reduce the risk of user resistance during the KMS implementation. The IT managers affirmed that customer focus and support strengthened the customer relationship during the KMS implementation. The strong customer relationship contributed to the success of the KMS implementation.

**Emergent Theme 3: Policy and Governance**

The third theme to emerge from participants’ responses was policy and governance. All participants believed that without written guidance and procedures, IT managers could not successfully direct the use and acceptance of KMS. IT Manager 2 emphasized, “We created a lot of policy letters, manuals, and regulations which ensured all users followed the business rules for using the system.” Business leaders implementing KMS must establish procedures, methods, and measures to execute organizational objectives successfully (Abu-Shanab et al., 2015). The development of manuals as a user guide explained the how-to of the KMS. IT Manager 5 highlighted that his or her KMS implementation was a downward directed policy by a senior level official and played a huge role in the successful implementation. IT Manager 3 explained that the

creation of policies, procedures, and governance was especially helpful during the data migration efforts, when directing users to move data from file shares to the KMS. Policy and governance played a significant role in the KMS implementation because it provided standardization and order to the project.

**Emergent Theme 4: Leadership and Management Support**

The fourth theme to emerge from participants' responses was leadership and management support. Four of the five participants indicated that leadership support played a significant role when effecting change management. IT Manager 1 indicated that leadership support facilitated change management, especially when faced with the generational gap and user resistance.

Ram et al. (2013) envisioned that 50% of system implementations were unsuccessful because business leaders failed to facilitate change management in their organizations. Executives and stakeholders recognized the need for employing change management when endorsing and supporting an enterprise system implementation (Ahmad et al., 2013). IT Manager 5 emphasized that when the KMS team briefed senior leaders, the KMS initiative became popular and widely accepted, and the manger stated, "When you're face to face with a head of a department or head of an organization, you have to repeat back what the senior leader's philosophy was or what the senior leader's guidance was." IT Manager 5 also highlighted the importance of the feedback loop with senior leaders as major contributor to the team's success. Leaders can expect employee loyalty, support, and buy-in if they display open communication with employees; open communication can help alleviate or minimize resistance to change, especially when

employees understand the vision and reason for the change and how it can affect their jobs or responsibilities in the organization (Wolf, 2011). The IT managers emphasized the importance of leadership and management support in implementing KMS because it showed that when leaders in the organizations facilitate change and lead by example, the users follow.

**Emergent Theme 5: Communication and Marketing**

The fifth theme to emerge from participants' responses was communication and marketing. Four of the five participants highlighted the importance of team meetings, marketing, and routine communication with users. According to Maklan, Peppard, and Klaus (2015), IT-representative-led marketing initiatives provide robust customer insight and customer decision-making trends that contribute to performance, create value, and increase profitability.

IT Manager 1 indicated that communication, information campaign, and marketing strategies influenced user behavior concerning user acceptance and KMS adoption. IT Manager 2 explained that mass briefings, town hall meetings, and travel to geographically separated users contributed to some of the initiatives conducted as part of communication strategy. IT Manager 3 highlighted that communicating with customers to ensure training and support were provided was important during the initial, mid-term, and final phase of KMS implementation. IT Manager 5 added, "We did a lot of marketing, so that we could get the word out." Communication and marketing enabled the IT Managers to advertise the implementation and the benefits of the KMS to all users.

**Emergent Theme 6: Business Process Management**

The sixth and final theme to emerge from participants' responses was business process management. Four of the five participants stressed the importance of integrating and automating business processes during the KMS implementation. Tarhini et al. (2015) emphasized the importance of integrating the business processes of an organization while adopting different technologies. IT Manager 2 stated that identifying business processes for integration to the KMS helped create the communication strategy. IT Manager 3 believed that KMS was instrumental in streamlining business process, provided continuity, and contributed to mission effectiveness. IT Manager 3 confirmed, "Streamline the processes, that was the strategy, and establish business procedures, and business processes; we also needed to create a set of continuity." IT Managers 5 and 6 noted that focusing on and automating users' business processes were keys to the success of KMS implementation because users were expecting efficiency as a result.

Enterprise systems are applications that integrate and automate business processes, such as human resources, budgeting, and customer service activities (Schniederjans & Yadav, 2013). Four of the participants highlighted that integrating business process management during KMS implementation not only contributed to operational efficiency, but also provided organizational agility and growth, innovation, and process improvement. Through KMS, the automation and integration of business processes was a significant boost for the successful implementation.

**Other Relevant Findings**

In addition to the aforementioned themes, the lessons learned and change management initiatives from participants supported their success. IT Managers 5 and 6 stated that the KMS teams were successful because they benchmarked from other implementers and gathered lesson learned and best practices. Gaining insight from previous experiences and passing on the lessons gathered during the project's lifecycle to future project managers are critical factors in propelling ERP success (Olszak & Ziemba, 2012). Highlighting the lessons learned were essential components of successful implementation. IT Managers 1 and 3 agreed that change management initiatives were a primary factor when persuading users to use the KMS. All five participants highlighted that KMS facilitated the capture of knowledge from retiring employees—something that was instrumental for the organization and mission effectiveness.

After each participant explained strategies used to implement a KMS successfully, each highlighted the importance of metrics and validation of success. All participants agreed that success of KMS implementation was measured by (a) using the number of hits to the KMS, (b) number of end users and site owners that were being trained, (c) number of remote accounts requests, (d) number of sites or communities that were being created, (e) number of documents migrated, (f) number of business processes automated, and (g) feedback from all users. While implementing a KMS, essential baseline metrics on existing procedures are obtained to aid in the evaluation of the implementation outcomes (Pérez−López & Alegre, 2012). The importance of

measurement and monitoring of metrics indicated and validated success or failure status of KMS implementation.

**Comparison of Findings With Other Peer-Reviewed Studies**

Training and education was the first theme that I discovered in this study. This theme is consistent with the work of Sykes et al., (2014) who found that business leaders should offer training for employees to maximize the benefits and features of the system. When implementers provide training, users can familiarize themselves with features and develop proficiency with system capabilities. This theme also reinforced Garg and Chauhan's (2015) findings that the people factor, which includes education and training, showed the most significant effect on the success of enterprise systems implementation.

The second theme that I identified in the study was customer focus. Customer focus is important when implementing KMS. By providing agile and rapid customer service, and attending to user needs during a KMS implementation, customer relationship results in long-lasting trust of the users toward the organization. This theme was consistent with Schniederjans and Yadav's (2013) findings, which revealed that ERP systems that integrate several business processes, such as customer service activities, become successful.

The use of policy and governance was the third theme that I found and highlighted the significance of standardization. Abu-Shanab et al. (2015) reported that when business leaders implement a KMS, procedures, methods, and measures become a standard strategy to execute objectives. Business leaders influence KMS implementation when decisions and business practices are documented in the form of policy or

governance and standard operating procedures are associated with organizational objectives and standardization in the organization.

Leadership and management was the fourth theme that I found in the research data. This theme is consistent with the work of Kanjanabootra et al. (2013) and Massingham (2014), who claimed that as organizational leaders recognize the need to develop, implement, and use KMS, the employees' performances and innovations improve. The successful introduction of change is based on effective transformational leadership. When leaders display commitment and support, they *walk the talk* and motivate employees during the change process (French & Bell, 1971).

The fifth theme that emerged from this study was communication and marketing, which are initial steps in establishing rapport with the users. Risselada, Verhoef, and Bijmolt (2014) emphasized that marketing and social influence play a role in the adoption of new high-technology products. This effect is the strongest during the initial direct marketing at the time of a new product entering the market.

Finally, the integration of business processes in the KMS implementation was the sixth theme that I identified in this study. This theme supported Alegra et al.'s (2013) findings that business leaders should recognize the types of knowledge that exist in business processes. Streamlining and automating of business processes create efficiencies; as such, KMS helps with integrating and disseminating tacit and explicit knowledge throughout an entire organization. In addition, this theme highlighted Margherita's (2014) research outcomes that enterprise systems implemented along with

automating business processes provided greater customer satisfaction, productivity, and speed, as well as a broader organizational view.

**Comparison of Findings to the Conceptual Framework**

The findings from this study are consistent with the conceptual framework of organizational knowledge creation theory. Nonaka et al. (2006) theorized that the organizational knowledge creation theory is based on KMS and the organization's knowledge assets. The information from the interviews and IT managers' additional documentation resulted in findings consistent with the holistic view of organizational knowledge creation theory that involved processing and capturing of knowledge and information into an organization's knowledge system (Schniederjans & Yadav, 2013). As Song et al. (2012) indicated, knowledge conversion, creation, knowledge sharing practices, and other concepts (e.g., learning culture, information systems, and team performance) are reliable measures that emerge from knowledge creation theory. In addition, the fundamental concepts from the organizational knowledge creation theory of promoting leadership, knowledge workers, and systems are consistent and aligned with the findings of my research. The strategies that the participants used (training, customer focus, policy and governance, leadership support, communication and marketing, and business process management) highlighted foundational elements of the organizational knowledge creation theory.

Nonaka et al. (2006) stated that the fundamental elements of the organizational knowledge creation theory involve promoting leadership, knowledge workers, systems, and processes. I demonstrated conceptual and literature alignment by illuminating

experiences of interviewees. The emergent themes provided elements related to strategies that IT managers used to successfully implement a KMS implementation.

**Comparison of Findings to Existing Literature on Business Practice**

The findings from this study are consistent with those of Venugopal and Suryaprakasa (2011), who noted that business leaders who recognized critical success factors for successful KMS implementation facilitate effective business practices within the organization. Consistent with the outcome of the study, Venugopal and Suryaprakasa wrote that when business leaders understand the processes of knowledge capture and importance of effective knowledge systems implementation, solutions to existing worldwide business problems become imminent. The findings of my study indicated that KMS implementation improve business practices in the organization through the integration of KM and business processes, training, communication and marketing, customer focus, and leadership support. These effective business practices increased the senior leaders' integration of people, processes, and technologies to achieve efficiency, improve organizational performance, automate business processes, and maintain continuity within the organization.

The results of the study in the areas of integrating people and processes and its advantages to the business performance were consistent with Bagheri et al.'s (2015) research. Bagheri et al. identified that KMS facilitate the capability of knowledge reuse and the sharing of effective business practices through alignment of KM processes, knowledge workers' learning cultures, collaboration, IT support, and organizational change to produce successful outcomes.

The strategies that the participants used such as training, customer focus, policy and governance, leadership and management support, communication and marketing, and business process management were identified (see Table 1). One hundred percent of the participants stated that training, customer focus, and policy and governance were primary success factors in the KMS implementation, 80% of the participants believed that leadership support, communication and marketing, and business process management played a huge role in their KMS implementation success (see Table 2). Based on all the comments from participants, KMS was an enabler to capture undocumented knowledge from retiring or relocating employees and provided continuity for new employees.

Table 1

*Central Research Question and Primary Themes (N = 5)*

| What were the strategies that supported the KMS implementation? | Primary theme |
|---|---|
| IT Manager 1 | Training<br>Customer focus<br>Policy and governance<br>Communication and marketing |
| IT Manager 2 | Training<br>Customer focus<br>Policy and governance<br>Leadership & management support<br>Communication and marketing<br>Business process management |
| IT Manager 3 | Training<br>Customer focus<br>Policy and governance<br>Leadership & management support<br>Communication and marketing<br>Business process management |
| IT Manager 5 | Training<br>Customer focus<br>Policy and governance<br>Leadership & management support<br>Communication and marketing<br>Business process management |
| IT Manager 6 | Training<br>Customer focus<br>Policy and governance<br>Leadership & management support<br>Business process management |

*Note*. IT, information technology; KM, knowledge management.

Table 2

*Strategies That IT Managers Used in Successful KMS Implementation*

| Themes | Participants who identified theme | % occurrence |
|---|---|---|
| Training | 5 | 100% |
| Customer focus | 5 | 100% |
| Policy and governance | 5 | 100% |
| Leadership and management support | 4 | 80% |
| Communication and marketing | 4 | 80% |
| Business process management | 4 | 80% |

*Note*. IT, information technology; KMS, knowledge management system.

## Applications to Professional Practice

I explored strategies that could positively influence business leaders and IT managers because the results provide a set of strategies to facilitate a successful KMS implementation process in an organization. Findings from this study may induce the elimination of critical barriers to the implementation and adoption of KMS. Successful implementations of KMS can impact nearly all organizational tasks and provide significant benefits and advantages to businesses (e.g., Ahmad & Cuenca, 2013; Ram, Wu, & Tagg, 2014). After business personnel create a successful KMS implementation, several organizational benefits exist: (a) increased innovation, (b) improved competitive advantage and organizational performance, (c) reduced duplication of effort and redundancies, (d) decreased waste, (e) increased automation of business processes, and (f) increased returns from financial investment (Massingham, 2014). With a successful KMS implementation, business leaders can enjoy improved cash flow generated by investment, input management, acquisition; they can also experience higher productivity,

and greater employee work quality (Massingham, 2014). The findings of the study might help business leaders by enhancing their knowledge in promoting the importance of integrating people, process, and technology. Such changes might result in facilitating knowledge transfers from retiring to current employees thereby eliminating the risk of knowledge loss and inefficiency.

## Implications for Social Change

Deokar and Sarnikar (2014) emphasized that generating positive social change requires mission, vision, and value statements related to overall organizational structure. Deokar and Sarnikar noted that KMS implementation involves more than simply an innovative application; it includes every aspect of KM culture embedded in the organization as part of its corporate mission, vision, and values. Practitioners and IT managers from local communities and government agencies must consider strategic objectives when they decide what strategies to use when implementing a KMS. Community leaders may create positive social change through the implementation of successful KMS thereby enabling citizens access to diverse supply of information, a sophisticated collaboration infrastructure for sharing information, and access to local information that address the concerns of community members (Rainie & Purcell, 2011).

In addition, leaders from nonprofit or local cultural organizations would benefit from a successful KMS framework to improve social conditions and allow citizens to have access to open knowledge sharing and potentially life-enhancing information. According to Carttar and Markham (2015), leaders from large nonprofit organizations value KMS because they understand that KMS improves processes, accelerates social

impact, creates partnerships and collaboration, strengthens external relationships, and improves connections between organizations, beneficiaries, and funders. According to International Fund for Agricultural Development (2007), a specialized agency of the United Nations, a successful KMS strategy and framework is ideal for rural communities, nongovernmental organizations, and farmers' organizations, to support the following social change: (a) equip local communities with a more supportive knowledge sharing and learning infrastructure, b) foster partnerships for broader knowledge sharing and learning, c) facilitate proper resourcing of initiatives aimed at breaking the silo culture, (d) update job descriptions and human resources processes while promoting knowledge sharing and learning, and (e) develop KM and communication skills and competencies.

## Recommendations for Action

The purpose of this study was to explore the strategies IT managers use to successfully implement a KMS. Based on the results of this study, business leaders should focus on the essential strategies such as the importance of training, customer focus, policy and governance, leadership support, communication and marketing, and business process management. These success factors are effective across generations and business types to influence KMS use for sharing, transferring, and retaining knowledge (Abu-Shanab et al., 2015; Ahmad et al., 2013; Keong et al., 2012; Massingham, 2014).

Moreover, my findings from this study may forewarn business leaders to the essential strategies used to implement a KMS successfully and cultivate an environment of knowledge sharing that is paramount to daily operations and organizational growth (Appelbaum et al., 2012). Nonetheless, KMS is only a part of the KM process; hence,

business leaders must gauge the success of these strategies to document lessons learned and enhance explicit documents through Nonaka's (1994) constructs of internalization, externalization, socialization, and combination.

As business leaders seek to mitigate knowledge loss by implementing a KMS that will capture knowledge from departing employees, research on strategies and success factors in KMS implementation is necessary. Business leaders who are planning to implement KMS should pay close attention to the importance of employing different types of training. Another strategy that business leaders should consider when implementing a KMS is high-quality customer service and a good reputation, because word gets around in the user's community that could influence user acceptance. Business leaders who implement KMS should establish tactics, training, and procedures, policy, and governance. This study highlighted the importance of leadership and management support as a successful foundation for KMS implementation. My study outcomes revealed that when leadership have open communication with users and advertises the features of KMS through marketing, KMS implementation is likely to succeed. Lastly, business leaders who provide KMS capability to the organization may have real-time access to codified knowledge practices, business processes, and communication, and might capture of knowledge assets.

The publication of this study and inclusive results via the Internet will reach all levels of global organizations. When business leaders have access to the results of this study, they will see that strategies of KMS implementation are key to knowledge sharing.

Business leaders will also find that knowledge retention of employees is not only focused on businesses within the US but also worldwide.

I plan to disseminate the findings of this research in academic and professional journals. In addition, I will present the findings at public sector enterprise information services conferences, KM workshops, KM training sessions, and any academic conferences. Lastly, I will provide a summary of findings to the participants.

## Recommendations for Further Research

Findings from this study merit further exploration. More specifically, it is important to understand the strategies that IT managers use to implement a KMS since organizations need implementation strategies to ensure success and sustain productivity. Despite the strengths of this study, some limitations surfaced. First, participants did not convey their experiences of capturing knowledge from departing employees due to the nature of the organizational mission. My recommendation for future research is to extend the questions beyond the strategies of KMS implementation and determine what specific knowledge will be needed in using KMS to drive effective action, irrespective of time, culture, and generational difference constraints. Next, I recommend that this study be extended to the rest of the employees. By employing a larger sample size, transferability will be enhanced. By interviewing numerous employees within the organization, the researcher may garner a broader explanation from a user acceptance viewpoint. Finally, in a future study, it would be useful to have a combination of proven collaborative technologies, in addition to a KMS, to capture and share tacit knowledge.

## Reflections

Throughout my doctoral journey at Walden University, I frequently found myself inspired with new knowledge, particularly in the areas of conducting semistructured interviews and analyzing research data. I was intimidated by all elements, attention to detail, and overall documentation process. However, after my engagement and conversation with participants, I gained a deeper understanding of their lived experiences to implement potential future strategies within organizations. Immediately, I noted that the participants were motivated, deeply enjoyed their roles in the implementation, and were inspired by their teamwork throughout the implementation experience.

After gathering the information to support my study, I learned and utilized data analysis software and employed the coding process. This experience was very time-consuming because I was unfamiliar with the software and the training was complex. The Walden University doctoral study process was a humbling yet satisfying experience. I feel a sense of honor, self-respect, pride, and self-accolade for being able to balance my career, family, and school workload at the conclusion of my doctoral journey.

## Conclusion

Creating a viable approach for capturing reusable knowledge is a perpetual problem in organizations. The lack of strategies for implementing a KMS continues to worsen the knowledge loss problem in a workforce that has constant employee turnover. The implementation and use of technologies, such as KMS, impact social, cultural, organizational, technical, and other institutional pressures (Pishdad & Haider, 2013). Aligning business strategies to develop capabilities have increased in importance as

businesses strive for competitive advantage in a diverse and changing marketplace (Revenaugh & Cook, 2013).

A solution to this imminent gap in knowledge loss is to take the necessary actions of capturing and retaining operational knowledge of departing employees using a KMS. Venugopal and Suryaprakasa (2011) indicated that critical success factors included change management and business process re-engineering activities. In addition, management support contributed to the success of a KMS implementation. Also, successful KMS implementation is based on change management strategies embedded in organizational culture change, knowledge transfer, and organizational learning (Chiang, 2013). Al-Ghamdi (2013) described effective change management strategies during KMS implementation as being critical when balancing organizational culture, user acceptance, and user training.

The implication of this research, consequently, goes beyond the private and public sector and extends to all KMS implementation within local and global communities. Findings from this study support Nonaka's (1994) organizational knowledge creation theory, additional organizational artifacts, and previous research. Business leaders' applications of Nonaka's knowledge creation theory will emphasize knowledge conversion and transform new knowledge captured from departing employees with extensive knowledge.

Despite the limitations found, this study enhanced business leaders' understandings of strategies used to implement a KMS successfully. Data collected were

analyzed using NVivo data analysis software. I validated the alignment with the conceptual framework and literature review through illustrating insights offered by interviewees. The six themes emerged comprising of: (a) training, (b) customer focus, (c) leadership and management support, (d) policy, procedures, and governance, (e) communication and marketing and (f) business process management.

Companies lost billions of dollars because of lost knowledge and failed KMS implementation; unless the right strategies for successful implementations are developed and identified, businesses will continue to experience difficulties capturing organizational knowledge. Business leaders must be able to assess adequately the importance of bridging the gap caused by knowledge loss and finding solutions and strategies to capture knowledge. When considering KMS implementation, business leaders should include exploration of key elements of strategies such as appropriate levels of training, customer focus, leadership and management support, policy and governance, communication and marketing, and business process management. The findings may provide new information on strategies used to implement a KMS successfully. In addition, the findings may contribute to organizational development, competitive advantage, and the long-term success of an organization.

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# Appendix A: Interview Questions

Interview questions are as follows:

1. How would you describe your KMS implementation?
2. What were the strategies that supported the KMS implementation?
3. What were the challenges seen during the KMS implementation for addressing the strategies?
4. What metrics did you use to assess the success of the KMS strategies?
5. How did you develop the strategies used for the KMS implementation?
6. What other insights can you share that led to identifying and addressing strategies for successful implementation of a KMS?

Appendix B: Walden University IRB Approval Memorandum

Dear Ms. McGee,

This email is to notify you that the Institutional Review Board (IRB) has approved your application for the study entitled, " Exploring Strategies to Implement Knowledge Management Systems."

Your approval # is 03-24-17-0359621. You will need to reference this number in your dissertation and in any future funding or publication submissions. Also attached to this e-mail is the IRB approved consent form. Please note, if this is already in an on-line format, you will need to update that consent document to include the IRB approval number and expiration date.

Your IRB approval expires on March 23rd, 2018. One month before this expiration date, you will be sent a Continuing Review Form, which must be submitted if you wish to collect data beyond the approval expiration date.

Your IRB approval is contingent upon your adherence to the exact procedures described in the final version of the IRB application document that has been submitted as of this date. This includes maintaining your current status with the university. Your IRB approval is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, your IRB approval is suspended. Absolutely NO participant recruitment or data collection may occur while a student is not actively enrolled.

If you need to make any changes to your research staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 1 week of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB application, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the IRB section of the Walden website:
http://academicguides.waldenu.edu/researchcenter/orec

Researchers are expected to keep detailed records of their research activities (i.e., participant log sheets, completed consent forms, etc.) for the same period of time they retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Walden University
100 Washington Ave. S, Suite 900
Minneapolis, MN 55401

# Appendix C: Interview Protocol

The purpose of this protocol procedure was to validate that each face-to-face interview follows the same exact set-up process. Further, the document ensures that all steps required for preparation necessary for each interview, follow a set process at the beginning of each face-to-face meeting, and continue during approximately 30-60 minutes of recorded responses to six open-ended questions, follow-up, and additional prompting. At some point after the meeting, you will be given an opportunity to review and return, a synthesis of the responses given, to ensure that the researcher captured exact meanings of the interview replies provided.

Protocol

I. Complete introductions.

II. Present consent form, go over contents, answer questions and concerns of participant(s)

III. Give participant copy of consent form.

IV. Turn on LGV10 recorder devices.

V. Introduce participant(s) using a pseudonym/coded identification; note exact location, time, and date.

VI. Begin the interview with question # l; continue through to the final question.

VII. Follow up with additional questions.

VIII. End interview sequence; discuss triangulation documents and member checking procedures with the participant(s).

IX. Obtain a copy of the company documents that are publicly available. Thank participant(s) for their participation in the study. Discuss contact numbers for any follow-up questions and concerns by participants.

X. Turn off LGV10 recorder device.

End protocol.

## Appendix D: Letter of Confidentiality Agreement

During the course of my activity in collecting data for this research: “Exploring Strategies to Implement Knowledge Management Systems” I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.

2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.

3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant’s name is not used.

4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.

5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.

6. I understand that violation of this agreement will have legal implications.

7. I will only access or use systems or devices I’m officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: Date: 3/17/2017