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Exploring knowledge retention strategies to prevent knowledge loss in project-based organizations (PBOs)

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Walden University
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Abstract

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by

Robert Haughton

MS, Keller Graduate School of Management, 2005

BS, University of South Florida, 1993

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Knowledge is a valuable asset, and managing that knowledge is now recognized as a significant contributor to organizations in the current business climate. The problem is that the loss of knowledge impacts project quality, organizational efficiency, and customer satisfaction. Too often, managers do not adequately communicate the knowledge retention strategies needed to reduce the impact of knowledge loss on project productivity. The purpose of this qualitative case study was to explore knowledge retention strategies to prevent knowledge loss in project-based organizations. The knowledge-based view of the firm and intellectual capital formed the conceptual framework. Eight participants consisting of managers, full-time employees, and consultants participated in the study. Data collection included semi-structured interviews using Zoom video teleconferencing software. Data analysis involved using two cycles of descriptive, pattern and focused coding to develop emerging codes and themes. This study revealed three themes: knowledge retention benefits, knowledge retention challenges, and knowledge retention strategies. This study's findings may help management develop and implement a knowledge retention strategy to identify, capture, and retain critical knowledge in their organization. The implication for positive social change may include organizations creating a positive workplace that influences employees to share and retain knowledge, increasing an organization's knowledge repository.

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Dedication

I dedicate this dissertation to all those who encouraged me to pursue my dream of earning a Ph.D. I appreciate all of the encouragement and motivation. A special feeling of gratitude to my wife, Jermaine, who supported and encouraged me throughout this process, for understanding the effort needed to complete this study, and for providing suggestions along the way. Without your support, I would not have finished this dissertation and achieved this major accomplishment in my life.

Acknowledgments

I wanted to work on this topic because I saw what happens to project teams when people leave unexpectedly and take their knowledge with them. I saw team members struggle to pick up the slack on the project because either the knowledge transfer was unsuccessful or there was a lack of existing organizational knowledge on hand to help them finish the outstanding project tasks. This results in a decrease in project productivity and a decline in team morale. Some may consider this normal business as usual, but it should not be this way.

I would like to acknowledge all the people who played a role in the completion of this research. My sincere gratitude to my doctoral mentor and chair, Dr. Steven Tippins, who provided guidance and patience throughout this dissertation journey. I would also like to thank my other committee member, Dr. Anthony Lolas, and my URR, Dr. Nikunja Swain for the encouragement, guidance, and constructive feedback that helped me along the way to become a better scholar-practitioner and writer. I would like to thank all the research participants; thank you for sharing your thoughts and comments. To all my friends and former colleagues, who encouraged and kept pushing me along the way, a heartfelt thank you!

This dissertation journey has been hard, and no one said this would be easy. Thank you to my Heavenly Father for giving me comfort and the strength to persevere when times were stressful and I wanted to throw in the towel.

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Chapter 1: Introduction to the Study

Knowledge is a key component providing organizations with a competitive advantage in the current business environment (Fong & Kwok, 2009; Lin et al., 2016). Arsenijevic et al. (2017) asserted that knowledge is now a key source of wealth to many organizations. Therefore, it is important for organizations to identify, capture, and retain valuable knowledge or it will be lost. Companies in different industries are now using project management as their main strategy to deliver products and services to their customers. Miterev et al. (2017) noted that project-based organizations (PBOs) are able to adapt to changing customer demands and integrate knowledge into their project teams and organization.

A key to the success of PBOs are employees, specifically the knowledge they create, store, and share, and the relationships they develop play a pivotal role in delivering products and services to customers (Swart & Kinnie, 2013). However, challenges such as retaining valuable knowledge after the project closes and employee turnover occurs can lead to knowledge loss (Ali et al., 2018; Pee et al., 2014). Therefore, it is important that management in PBOs is proactive in mitigating these challenges and others to prevent project delays and knowledge loss.

This research study explored knowledge retention strategies to prevent knowledge loss in PBOs. The findings from this study may help managers to develop and implement a knowledge governance framework to identify, capture, and retain knowledge to strengthen their competitive advantage and achieve business objectives. Chapter 1

includes the background of the problem; problem statement; purpose of the study; research questions; conceptual framework; nature of the study; definition of the terms; assumptions; scope and delimitations; limitations; significance of the study to practice, theory, and social change; and a summary of the chapter.

Background of the Study

Knowledge is recognized as the most significant asset for those companies that focus on capabilities and intangible resources as tools to compete in the marketplace; however, it is an asset not managed effectively (Whelan & Carcary, 2011). The management of knowledge is becoming more crucial because a majority of organizational, economic, and social activities are knowledge driven (Indira et al., 2012). Daghfous et al. (2013) stressed the importance of knowledge management as organizations realize that using knowledge resources effectively gives them the ability to be innovative, quickly respond to customer demands, and support operational activities. Massingham and Massingham (2014) indicated that companies in the United States invest in knowledge management by spending $73 billion annually on software related to the concept alone; however, they also lose approximately $31.5 billion a year by failing to share knowledge.

Many organizations are starting to organize their work on a project basis in response to rapid market changes and increasing customer demands (Almeida & Soares, 2014; Pemsel et al., 2014). The PBO has become an accepted business strategy and is able to create new organizational structures based on each project or customer demand

(Bourouni et al., 2015). A majority of PBOs perform several projects at the same time. Some of these projects are generally high risk, large, and complex and must be completed within a defined timeline and budget (Ajmal et al., 2010). In the current global economy that is categorized by intense competition and radically shrinking life cycles, projects have become an important vehicle for organizations to deliver products and services to their customers (Artto et al., 2015).

Within a PBO, management may move resources from other projects to meet the customer demands of another business-critical project, especially if it is behind schedule. This strategy is used when organizations do not have the needed specialized resources or have difficulty recruiting and hiring new employees with the necessary skillsets (Yaghootkar & Gil, 2012). The practice of moving resources from a project in the short term can be effective to ensure the more important or business-critical project finishes on time and below budget. However, Yaghootkar and Gil (2012) argued that increasing the size of a project team to keep the project from falling behind schedule can decrease productivity on other projects because the learning curves increase as knowledge resources switch back and forth between projects. Because most project teams are temporary, they may not have established knowledge management processes and a culture that supports the creation, sharing, and transferring of knowledge among team members. As a result, critical knowledge can be lost after the project has been completed and the team members have moved on to other projects, unavoidably hurting the growth of organizational knowledge and impairing organizational learning (Ajmal et al., 2010).

Problem Statement

Knowledge loss is one of the most important risk factors facing PBOs today, impacting their project productivity and overall competitive advantage (Martins & Meyer, 2012). PBOs face the risk of knowledge loss through either employee turnover or project termination when the project team is disbanded (Bourouni et al., 2014). Bessick and Naicker (2013) added that an important factor for organizations to remain competitive is the retention of the knowledge that exists within their project team members. Management uses many techniques to manage knowledge, such as knowledge sharing and knowledge transfer; however, it is unclear whether they do enough to prevent knowledge loss. It is up to management to use an employee's knowledge; however, there is always the risk that the employee will leave, taking their knowledge with them (Parboteeah et al., 2016). The general business problem is that knowledge loss impacts project quality, customer satisfaction, and organizational efficiency. The specific business problem is that management does not clearly communicate the knowledge retention strategies needed to prevent knowledge loss that could adversely impact project productivity.

Purpose of the Study

The purpose of this qualitative case study was to explore knowledge retention strategies that help to prevent knowledge loss in PBOs. This study contributed to the existing body of knowledge on knowledge governance, knowledge retention, project knowledge management, and organizational learning. This study included semi-

structured interviews of managers and consultants to determine the knowledge retention strategies managers use to mitigate the risk of knowledge loss. The results from this study could help managers develop new strategies to retain knowledge, which may strengthen an organization's competitive advantage with its customers.

Research Questions

For this research study, I evaluated information from semi-structured interviews with managers and consultants about the impact of knowledge loss on project productivity in PBOs and how to prevent it. The information from these sources addressed the following question:

RQ1. What knowledge retention strategies do managers use to prevent knowledge loss?

Conceptual Framework

I used two concepts to construct the framework for this study: (a) the knowledge-based view (KBV) of the firm (Grant, 1996) and (b) intellectual capital (IC) (Edvinsson & Malone, 1997). Each of these concepts supported assumptions that provide a solid basis for understanding the importance of knowledge in organizations and the strategies management implements to identify, capture, and retain that knowledge.

The KBV of the firm states that knowledge is the most critical resource for an organization (Grant, 1996). Additionally, this view proposes that knowledge increases financial performance for an organization (Mousavizadeh et al., 2015). Knowledge can be created and combined from multiple entities within the organization, such as the

culture, employees, systems, and policies (Tongo, 2013). This view also acknowledges that intangible resources such as knowledge, skills, and talent may contribute more to an organization reaching and maintaining a high performance than tangible resources such as physical and financial assets (Wang et al., 2014). The KBV extends from the resource-based view of the firm, which suggests that rare and valuable resources may give a competitive advantage to the organization that acquires the resources (Brown, 2014). The resource-based view stresses that the correct management of a firm's resources is vital to the success of the firm and is a critical indicator of its competitive advantage (Mousavizadeh et al., 2015). Munoz et al. (2015) stated that the resource-based view arose from the notion that the source of competitive advantage comes from within the organization, and the adoption of new strategies is limited by the level of the organization's resources such as competencies.

IC is defined as the knowledge, skills, and attributes each employee has multiplied by their willingness to work hard (Harris, 2000). Different authors have recognized this explanation of IC as one of the most common definitions of the concept. Secundo et al. (2016) expressed that IC can be put to use to create value for an organization. Demigha (2015) defined IC as organizational knowledge that is used to produce wealth and gain a competitive advantage.

Radenkovic et al. (2014) explained that the concept of IC refers to knowledge as a resource and as a capital. Knowledge as a resource indicates that knowledge is a very important resource that is transformed to create value. Knowledge as a capital considers

knowledge to be an important element that can be validated financially. Gioacasi (2014) explained that IC comprises three different types of capital: human capital, relational capital, and organizational capital. Radenkovic et al. (2014) referred to human capital as the skills and knowledge an individual possesses. Harris (2000) explained that such skills and knowledge increase productivity, which justifies the costs to acquire them. Human capital will be elaborated on further in Chapter 2.

Nature of the Study

The focus of this research study was on the knowledge retention strategies management uses to help in the prevention of knowledge loss in PBOs. I reviewed and considered three different research methodologies for this study. The three research methodologies were qualitative, quantitative, and mixed method. A quantitative research study involves measurement and assumes that the social phenomena under study can be measured. Watson (2015) stated that the measurement is used to analyze data for trends and relationships and to verify the measurements made. The quantitative research methodology was not appropriate for this research study. This study did not involve any measurements and did not set out to analyze data for trends and relationships.

The mixed-methods research methodology was not a proper fit because it requires a purposeful mix of qualitative and quantitative data to draw conclusions based on the total strength of both data sets (Shannon-Baker, 2016). Mixed methods would be appropriate if my study required both qualitative and quantitative data to examine the relationship between variables. I selected the qualitative research approach to gain a

deeper understanding of a workplace phenomenon by gathering data from the participants' point of view. A qualitative research study provided me the advantage of collecting managers, full-time employees, and consultants' perspectives and detailed responses to explain how to reduce knowledge loss to improve project productivity in PBOs.

I analyzed five different qualitative research study designs. I considered grounded theory, narrative, ethnography, phenomenology, and case study. Researchers tend to choose phenomenology when the purpose is to develop a new theory about a phenomenon (Simon, 2013). Simon (2013) stated that researchers use grounded theory to ground a social practice in an environment. Because my research focused on a single unit, grounded theory was not appropriate for this study. The narrative research design focuses on recounting stories to explain life experiences. Narrative research also requires an overview of a person or group through the eyes of the researcher (Jørgensen et al., 2013). I did not select a narrative research design because interviews and artifacts guided my research study.

An ethnography research design would not have provided the required data for my research study because the ethnographer tries to understand the culture of people (Spradley, 2016). Spradley (2016) further argued that ethnography includes techniques, ethnographic theories, and descriptions of human cultures from the perspective of those who have learned them. I did not select the ethnography research design because my study did not address the culture within the PBO. I also did not select a

phenomenological research design because it deals with the meaning of life and the nature of responsibility for personal action and decisions (Van Manen, 2016). I decided to use the case study research design for this study because, as Cronin (2014) explained, case study research uses individual or multiple cases to address a specific situation. The case study design gives the researcher the latitude to study anything in a given situation, whether it is individuals, groups, or a specific phenomenon. Furthermore, the goal of case study research is to create a truthful and thorough description of the case. A more detailed discussion of the research approach and design selection is presented in Chapter 3.

Definitions

This section includes terms I used that may or may not be familiar to individuals outside of human resources and the information technology (IT) industry.

Human capital: the main element of IC (Baron, 2011), comprising knowledge, skills, experience, and professionalism of individuals in an organization (Hadad, 2017; Vidotto et al., 2017).

Knowledge assets: any knowledge-based intangible asset or capital that produces value outcomes in the marketplace (Swart & Kinnie, 2013; Wu & Chen, 2014).

Knowledge governance: the adoption of formal and informal organizational structures and mechanisms to have an impact on knowledge management processes and attain superior organizational performance (Cao & Xiang, 2012).

Knowledge loss: the reduction of organizational effectiveness and productivity due to the loss of a subject matter expert or knowledge worker (Sumbal et al., 2018). The loss of IC in organizations (Massingham, 2018).

Knowledge retention: the capturing of knowledge that is in danger of being lost when an employee leaves an organization (Sirorei & Fombad, 2019).

Multi-project environment: an organizational environment where at least two or more projects are executed concurrently while sharing resources from a common pool (Eskerod, 1996).

Organizational forgetting: the unplanned or unintended loss of organizational knowledge (Aydin & Gormus, 2015).

Project-based organizations: organizations that produce a majority of products and services through projects for their customers (Chronéer & Backlund, 2015).

Assumptions

There were several assumptions made in establishing the foundation of this research study. The first assumption was that the participants were able to relate their experiences and perspectives about the researched phenomenon. Second, I assumed that management and leadership would provide accurate information regarding knowledge retention practices and strategies. In this study, I assumed that organizations had knowledge management processes to identify, capture, and retain knowledge within the organization. Third, I assumed that the organization had multiple projects varying in size and scope running concurrently. The final assumption was that the projects undertaken

would have most of the risks mitigated, were completed on time and under budget, and met customer satisfaction.

Scope and Delimitations

The scope of this study focused on an information systems (I/S) organization that runs multiple projects concurrently with dedicated teams for each project. Further, the focus was on which knowledge governance mechanisms are in place when project team members are reallocated to another project or leave the organization voluntarily or involuntarily. I delimited the participants of the study to project teams impacted by knowledge loss. The roles of the participants were limited to managers and consultants who work in a PBO.

Limitations

The first limitation was the potential for researcher bias in this study. My professional background is in I/S and project management, and I have witnessed how the loss of knowledge can impact project teams and their productivity. Another potential limitation was the sample size of the study. The intended sample size for this research study was 24 subjects. While this size was appropriate for the time frame I selected to study for the impact of knowledge loss on project productivity, it provided a limited view of the case. Because of the sample size, there may not have been complete information on which strategies are used to retain knowledge to improve project productivity. However, the type of semi-structured interview questions and the ability to allow the study participants to give extensive detail and description of their opinions and experiences

provided for a rich and thick depiction of the perceptions that managers and consultants have about their ability to be successful when lost knowledge was not retained by the organization. The level of detail that the sample participants provided helped to balance the small sample size.

The constraints set by the case study design was another limitation of this research study. Purposeful sampling was used for the data collection and analysis of this research study. The main reason for using this sampling technique is that it allows the researcher to identify and select individuals that have knowledge and experience with a specific phenomenon, allowing for the effective use of limited resources (Palinkas et al., 2015). The weakness of using purposeful sampling is that data samples might be biased.

Significance of the Study

Organizations may be served by recognizing the type of impact employee turnover, organizational culture, and leadership can have on their project teams and operations. This study had the potential to fill a gap in knowledge by focusing on preventing knowledge loss through knowledge retention within a PBO. The findings from this study may be used to make project managers aware that failing to manage and capture valuable project knowledge can lead to project delays. The results of this study could provide insights into the processes that an increasing number of organizations use to identify, capture, and retain knowledge at the project level and across the organization.

Significance to Business Practice

Insights into the experiences of managers and employees could help organizations develop strategic approaches to identify, capture, and retain knowledge and IC from employees who (a) voluntarily or involuntarily leave the organization and (b) are reassigned to another business-critical project. Insights based on the themes and concepts of the qualitative information might enable researchers to conduct empirical studies to generalize the findings for future I/S organizations. In addition, this study may influence the operation of organizations in other industries such as banking and finance, education, telecommunications, and health care.

Significance to Theory

This study had the potential to add to the existing literature on knowledge governance, knowledge management, knowledge retention, and organizational learning within a PBO. Pemsel et al. (2014) pointed out that knowledge governance is starting to emerge as an approach to address problems that organizations have with their knowledge management processes. Understanding the application of knowledge governance mechanisms in a PBO may help remove the barriers to knowledge retention and sharing. By not practicing effective knowledge management in PBOs, management is unable to learn from the projects (Akhavan et al., 2014). The failure to document lessons learned from the finished projects can lead to repeating past errors in future projects.

Significance to Social Change

The implications for positive social change may include the continued development of consultants through knowledge retention so they can contribute to the social good of the communities in which they live. Levallet and Chan (2019) noted that knowledge retention is strengthened when strategies such as knowledge transfer and sharing are implemented.

Examining knowledge loss in PBOs may lead to the identification of new information for operational continuity. The new information may assist PBOs to harness and manage the knowledge from their project teams. The findings from this study may contribute to the development of new knowledge retention processes that will benefit project teams and organizations. The information learned from this study could help to retain, preserve, and maintain the project specific knowledge of project team members. The insights based on the themes could help researchers generalize the findings for organizations.

Summary

Knowledge has now become a strategic asset for organizations, and the management of this knowledge is essential because many business activities are knowledge driven. Most businesses organize their work in the form of projects in response to changing business and economic environments as well as increasing competition. In a PBO, projects can vary according to size and scope and, in some instances, run concurrently. Some projects are identified as being critical to

organizational success, and management can decide to move knowledge resources from another project to the critical project. By shifting resources from one project to another, management may fail to recognize the impact knowledge loss will have on the overall productivity of the other projects. Developing a case study from the majority of stakeholders in a PBO based on the capture and retention of knowledge could be a starting point toward addressing that problem.

Chapter 2 includes evidence to support the research problem and research question. Additionally, Chapter 2 is a review of academic literature covering topics of knowledge management, knowledge loss, knowledge retention, and PBOs. The literature review addresses how the organizational factors of employee turnover, culture, and leadership have an impact on knowledge loss. Chapter 3 describes the research approach and design I selected for capturing information about the knowledge retention strategies management uses to prevent knowledge loss in organizations. Chapter 4 describes the results of the collected interview response, including the emerging themes from the study participants and how those themes relate to the literature. Chapter 5 includes the summary and interpretation of the collected data, recommendations, and what those recommendations mean for both theory and practice and the implications for future research.

Chapter 2: Literature Review

Knowledge management serves an essential role during a project life cycle for two reasons. First, transferring and sharing knowledge positively affects project performance in terms of cost, schedule, and quality. Second, new knowledge needs to be generated and integrated into projects and organizational practice. If the new knowledge is not integrated, the knowledge will become lost or worthless (Oun et al., 2016). Lin et al. (2016) contended that knowledge management helps organizations share insights, increase work efficiency, document experiences from projects, and create and retain IC. When employees leave a project or organization, valuable knowledge is lost if specific knowledge retention mechanisms are not applied. In light of this result, knowledge retention should be an element in an organization's knowledge management strategy (Lin et al., 2016).

The purpose of this research study was to explore knowledge retention strategies to prevent knowledge loss in PBOs. An examination and understanding of the concepts and theories related to managing and preventing the loss of knowledge in PBOs is needed. The goal of this chapter is to investigate these concepts and theories through a literature review. The literature review of this research study begins with the exploration of knowledge and the concepts of knowledge management, creation, sharing, and transfer. Other topics reviewed are knowledge governance, organizational learning, absorptive capacity, and PBOs. The literature on human capital, social capital, and relational capital establishes the foundation for the concept of knowledge assets. In

addition, the literature on employee turnover, organizational culture, and leadership was reviewed to discover how these challenges impact the management of knowledge loss.

Literature Search Strategy

The peer-reviewed articles in this literature review were identified using the Walden University online library, Google Scholar, and the following academic and industry databases: Business Source Complete, ABI/INFORM Collection, Emerald Insight, SAGE Journal, EBSCO, ProQuest Central, Academic Search Complete, ACM Digital Library, ABI/INFORM Complete, Computer and Applied Sciences Complete, ScienceDirect, and IEEE Xplore Digital Library.

During the initial literature search, I used the peer reviewed search option to obtain scholarly articles identified by keywords. When searching electronic databases such as ProQuest, I selected the option *peer reviewed* to obtain scholarly articles, and I limited the publication date to a 5-year time range. Articles published outside of the 5-year window were considered if the initial search failed to retrieve extensive resources on a specific subject. The resulting research criteria built upon and complemented each other, resulting in more than 130 peer-reviewed articles and books. Although some of the older references provided the contextual framework for the study, more than 80% of the overall references were peer-reviewed and published within 5 years of my anticipated graduation date.

I also limited the search terms to title, author, or keyword to refine subsequent searches. The following keywords were used to search the electronic databases*: employee*

turnover, *human capital*, *intellectual capital*, *knowledge assets*, *knowledge loss*, *knowledge based view of the firm*, *knowledge governance*, *knowledge management*, *knowledge retention*, *knowledge strategy*, *knowledge transfer*, *multi-project environment*, *organizational culture*, *organizational performance*, *organizational learning*, *organizational knowledge*, *absorptive capacity*, *project governance*, *project leadership*, *project organizations*, *project-based organizations*, *project teams*, and *social capital*. In addition to the journal articles, books on knowledge management were reviewed for definitions, terms, theories, and concepts.

Conceptual Framework

The framework for this study consisted of the theory of the KBV of the firm and the concept of IC. The KBV theory and IC were used as a guide to explore knowledge resources and knowledge management processes and how they impact organizational and project knowledge. The KBV of the firm addresses the point that knowledge is an important factor to an organization and its competitive advantage (Akanbi, 2016; Handzic et al., 2016). The concept of IC refers to the skills and talents of individuals or knowledge-based resources that create value and contribute to the business and economic success of an organization (Hussinki et al., 2017; Kianto et al., 2014).

Knowledge-Based View of the Firm

The KBV of the firm theory is built on the resource-based view of the firm originally proposed by Edith Penrose in 1959. The resource-based view of the firm assumes resources and capabilities are not uniform across competing organizations

(Killen et al., 2012), and these resources are drivers of competitive advantage (Jugdev & Mathur, 2012). Lopez and Esteves (2013) indicated that the KBV theory proposed that knowledge is the most valuable resource to organizations because it is essential to many activities and processes. Erden et al. (2014) explained that how an organization creates, transfers, and uses knowledge has a significant impact on its overall performance and ability to be competitive within a specific industry. Individuals within an organization are the main creators and sources of knowledge. The KBV theory proposes that if knowledge is a leading resource within an organization, and individuals create and store knowledge, employees are the key stakeholders in an organization (Agostini & Nosella, 2017). The KBV theory also enhances the awareness of different types of organizational knowledge such as tacit and explicit organizational knowledge (Mainga, 2017). It is necessary for management to incorporate individual knowledge into the organization by providing an environment where the knowledge can be shared among the specialized knowledge workers. Additionally, the KBV theory strengthens the position that knowledge management processes such as the creation, acquisition, and transfer of knowledge lead to organizational performance (Barkat & Beh, 2018).

Intellectual Capital

Wang et al. (2016) identified another strategic resource for organizations in a knowledge-based economy. That resource is IC. IC results from the knowledge, talent, and skills of each employee (Sayadi et al., 2013). An organization's IC is the accumulation of all its knowledge resources, which exist within or outside the

organization (Hsu & Sabherwal, 2012). There are varying definitions of IC; however, they all seem to agree on the same points. IC is a combination of intangible assets used to generate value in the organization (Tarride & Osorio-Vega, 2013). Fragouli (2015) defined IC as a group of organizational knowledge assets that contribute to the competitive position of an organization by adding value to distinct stakeholders.

Salmaninezhad and Daneshvar (2012) argued that IC consists of different components that are grounded in employees, routines, and customer relationships. Vale et al. (2016) conceptualized IC by breaking it down into three dimensions: human capital, structural capital, and relational capital. Human capital is the knowledge, attributes, attitudes, and abilities stored in employees (Asiaei & Jusoh, 2015; Vale et al., 2016). Structural capital is the organization in general, including systems, culture, and intellectual property such as patents or trademarks (Ienciu & Matis, 2011; Vale et al., 2016). Relational capital is the relationships an organization has with the individuals or organizations to which it sells products or services. These relationships may involve customers, suppliers, and vendors (Dumay & Garanina, 2013; Vale et al., 2016).

Hsu and Sabherwal (2012) emphasized that the literature on IC shares the same broad objective as knowledge management, which is to understand the role of knowledge and its management in an organization achieving success and competitiveness. The literature on IC also looks at the nature of organizational knowledge, its different types, and how it affects overall organizational performance. Hussinki et al. (2017) examined the connection between IC and knowledge management practices and their impact on

firm performance, concluding that firms with strong IC and knowledge management practices outperformed firms with low IC and knowledge management practices. Wang et al. (2016) noted that firm performance is influenced by the relationship between the firm's IC and the knowledge management strategy they choose to implement. Zaei and Kapil (2016) identified that IC has a positive relationship with knowledge management. This relationship helps promote the success of knowledge management initiatives within the organization. The authors concluded that knowledge could be managed effectively by increasing and improving the components of IC. Within a project management context, Cole (2017) referred to project management as an IC commodity with its foundation in knowledge and experience. Turner et al. (2015) used an IC perspective to argue that managing projects uses human, social, and organizational capital, which are the three dimensions of IC. The authors concluded that a combination of human, social, and organizational capital was present in the projects but not all three at the same time. Handzic et al. (2016) added that IC has positive results on the success of IT projects.

What Is Knowledge?

Before discussing the subject areas of knowledge management and knowledge governance, it is important to explore the concept of knowledge and the different types of knowledge in relation to knowledge management. Many organizations are now becoming interested in the nature of knowledge, mainly in part as a result of IT, which provides the ability to manage knowledge as a corporate asset (Almudallal et al., 2016). Koskinen (2013) stated that the knowledge in knowledge-intensive companies is fundamentally

social in nature because the work done in these types of organizations is intellectual in nature where qualified individuals with specialized knowledge form the majority of the work force.

Brajer-Marczak (2016) reviewed literature on knowledge management in the improvement of business processes and discovered that authors used various definitions of knowledge. Knowledge has been studied from many perspectives and can be problematic in its definition and scope (Randeree, 2006). One perspective states that knowledge comes from structured and organized information resulting from cognitive processing and validation. This perspective of knowledge answers *how* questions (Cooper, 2016). Tang et al. (2016) defined knowledge as the capacity to act effectively where capacity is a trait associated with a person or group.

The significance of knowledge management has encouraged management studies scholars to dig deep into the meaning of knowledge. They have wrestled over the question: *What is knowledge?* This question has occupied the minds of philosophers for centuries (Almudallal et al., 2016). This question is explored within the philosophical discipline known as the *theory of knowledge* or *critique of knowledge*, among other names. This discipline takes the viewpoint that human knowledge is scientific (Segundo, 2002). This approach branches into two main epistemological camps: the objectivist perspective and the practice-based perspective.

The objectivist perspective regards knowledge as an entity or commodity that can exist independently of people in a codifiable form (Hislop, 2013). This perspective also

addresses knowledge as something that exists in the human head and is acquired, modeled, and expressed precisely in the most objective and explicit terms possible (Almudallal et al., 2016). The practice-based perspective contrasts with the objectivist perspective by challenging that conceptualization of knowledge and instead assumes knowledge is embedded in the context in which it arises. As such, it is inseparable from peoples' work, places, and practices (Hislop, 2013). Thus, in this perspective, knowledge is not viewed as an objective entity that can be separated from people or activities (Almudallal et al., 2016).

There are two types of knowledge, tacit and explicit knowledge, which are equally important and complementary to each other (Millar et al., 2016). Explicit knowledge is formal and documented, while tacit knowledge is informal and lives in people's minds as skills and experiences (Ayub et al., 2018; Polanyi, 1966). A further discussion on tacit and explicit knowledge is detailed below.

Tacit Knowledge

Tacit knowledge consists of two elements, cognitive and technical. The cognitive element is an individual's mental model such as their beliefs and viewpoints. The technical component consists of concrete experience, crafts, and skills applied to a specific context (Alavi & Leidner, 2001). Tacit knowledge, also known as implicit knowledge, is currently present in the individual but cannot be expressed easily by the individual in either spoken or written form (Turner et al., 2012). Jasimuddin and Zhang (2014) reviewed the work of several academics who argued that tacit knowledge is

personified in the human mind and cannot be detached from the person or people who possess it, thus making it challenging to retrieve and transfer.

Explicit Knowledge

Explicit knowledge is tacit knowledge that is codified, documented, and shared, making it readily available to either a single person or group at a minimal cost (Jasimuddin & Zhang, 2014). Some examples of explicit knowledge are policy manuals, technical documentation, and reference guides (Terzieva & Morabito, 2016). Explicit knowledge is tougher to comprehend than tacit knowledge because it must be tacitly understood and put into practice (Addis, 2016). Addis explained that all knowledge is established initially as tacit knowledge. This explanation is rooted in the epistemology of practice-based knowledge and implies that explicit knowledge does not exist at first.

Knowledge Management

Knowledge management leverages the KBV of the firm to understand how to use knowledge to achieve organizational effectiveness and efficiency (De Toni et al., 2017). It is a discipline that helps to design strategies to make sure that knowledge flows to the correct people when needed (Kianto et al., 2019). The concept of knowledge management has been defined in many different ways by many authors, and none of these definitions are completely accurate nor are they completely imprecise (Terzieva & Morabito, 2016). Hislop (2013) analyzed the literature on knowledge management and emphasized that there is a lack of consensus regarding how knowledge management is defined and conceptualized. Knowledge management is a process of capturing

knowledge from either individuals or groups and sharing it with the desired entities. This process makes sure that knowledge reaches the right people so they can make the right decision and raise organizational performance (Addis, 2016; Gitinejad & Keramati, 2013). From a pragmatist perspective where knowledge is defined as the outcome of inquiry, reflective knowledge management is another approach to knowledge management. This approach fights for the participation of all knowledge workers in the sharing of knowledge with others (Vo, 2012).

Knowledge management is a concept that crosses over different disciplines. It can be applied to business, I/S, and organizational management. Reich et al. (2012) indicated that knowledge management helps to create definite bodies of knowledge within a project. The knowledge created is important to the achievement of the project goals. Even though some of the knowledge will stay tacit, most of the knowledge needs to be made explicit so it can be reviewed, confirmed, shared, and finalized. Reich et al. (2014) developed a model for project-based knowledge management, which proposes that there are two goals of knowledge management. The first goal is creating an avenue where the business value of the project can be reached. The second goal is making sure there is an understanding between the project team and business sponsors on what the project must accomplish for the business. These goals ensure a plan is in place for the project, which should achieve the desired business results. Additionally, these goals also ensure that there is a shared understanding that project teams recognize consequences when they deal with unanticipated project changes.

Massingham (2014) provided useful insight about knowledge management as it pertains to managing knowledge resources. This insight known as the product versus process view offers two different perspectives on how knowledge is viewed within the individual and how it can be utilized. The product view of knowledge management attempts to separate knowledge from the individual. This view is about creating explicit knowledge from tacit knowledge and sharing that knowledge with other individuals, teams, or the organization at large. The process view of knowledge management, as Massingham (2014) stated, keeps knowledge with the individual. This view approaches knowledge management as a vehicle to share knowledge through collaborative and cooperative efforts.

Knowledge Creation

Knowledge creation is a collaborative process that focuses on generating new knowledge in terms of new ideas and solutions (Kianto et al., 2019). It is a complex activity that organizations should not perform in isolation. Organizations need to acquire new knowledge from outside sources and combine them with their own internal resources to keep producing knowledge (Zaragoza-Sáez et al., 2016). Tissayakorn et al. (2013) contended that knowledge creation stresses organizational learning and employee motivation for innovation and capturing the lessons learned from previous projects to obtain new and better knowledge.

Knowledge creation is a constant process that takes place through the interactions between individuals and their environment, leading to the development of new

knowledge in the organization (Little & Deokar, 2016). García-Fernández (2015) stated that knowledge creation is understood as the dynamic process of collecting data, converting it into information, and turning it into knowledge, which then progresses through various levels of learning. Nonaka and Takeuchi (1995) created the SECI model which helped in the development of the organization knowledge creation theory. The SECI model describes the interaction between tacit and explicit knowledge through four modes or processes: socialization, externalization, combination, and internalization. Each one of these modes characterizes a different activity in an organization which separately results in the creation of knowledge. The socialization process converts tacit knowledge into new tacit knowledge. The externalization process converts tacit knowledge to explicit knowledge. Combination is the process that creates new explicit knowledge from existing explicit knowledge, and the internalization process creates new tacit knowledge from explicit knowledge.

Knowledge Sharing

Knowledge is an essential element for an organization to survive in today's competitive business environment (Asrar-ul-Haq & Anwar, 2016). Lee et al. (2015) mentioned that knowledge enables organizations to be innovative and improve operational efficiency. However, individual employees prove to be a major hurdle to effective knowledge management. Yen et al. (2015) noted that people should be encouraged and comfortable to share their knowledge in familiar and friendly settings.

The sharing of knowledge is gaining importance in organizations looking to enhance their effectiveness and increase their competitive advantage (Amayah, 2013).

Knowledge sharing is a cornerstone for organizational success and many organizations adopt it as a survival strategy. Knowledge sharing is the transferal of knowledge among individuals, groups, and organizations (Asrar-ul-Haq & Anwar, 2016). Lee et al. (2015b) viewed knowledge sharing as the revealing of pertinent knowledge without transmitting all of it. Knowledge sharing is also seen as receiving feedback from a manager or another employee to help in solving problems and in the development of new ideas or products (Park & Kim, 2015). Knowledge sharing can take place through written or verbal communication and networking with other subject matter experts.

Knowledge sharing occurs at different levels of the organization. Knowledge is shared among employees as they learn new methods of completing assignments in a more efficient and effective way. The knowledge shared at the organizational level involves exchanging knowledge from employees to different groups, where the knowledge is stored and made available for others to use (Yeo & Marquardt, 2015).

It is important to remember that some individuals will not share their knowledge to protect their status in the group. Organizations encourage knowledge sharing by providing incentives, but employees are still hesitant to share. Therefore, it is critical to identify which factors will increase the knowledge sharing behavior of individuals (Lee et al., 2015b).

Knowledge Governance

Knowledge sharing is crucial to reach alignment and a mutual understanding because the "congruence of knowledge cannot readily be achieved without sharing" (Reich et al., 2014, p. 592). Sanz and Ortiz-Marcos (2020) added that knowledge governance has an influence on knowledge sharing by defining how an organization manages the activities related to knowledge. Knowledge governance is a concept that is constantly evolving. The focus of knowledge governance is coordinating knowledge processes that are in alignment with set objectives through governance initiatives (Pemsel et al., 2014). It began from the premise that governance mechanisms can be influential on knowledge processes (i.e., creation, retention, and sharing), which help an organization view knowledge as a strategic resource (Foss, 2007). Karvalics and Dalal (2013) added that the concept of knowledge governance has evolved over the years and, in its latest form, "refers to choosing structures and mechanisms that can influence the processes of sharing and creating knowledge" (p. 3).

Knowledge governance intersects with different disciplines such as knowledge management, human resource management, organization studies, and project management (Foss, 2007). Pemsel et al. (2014) explained that the concept of knowledge governance is closely related to the concepts of knowledge management and organizational learning. Learning is made possible within knowledge governance by producing knowledge and sharing ideas in social networks (Gerritsen et al., 2013). Knowledge governance serves to stimulate purposeful knowledge sharing through

various formal mechanisms, such as organizational structures and reward systems; relational mechanisms, such as steering committees and expert panels; and informal mechanisms, such as trust and organizational culture (Pemsel et al., 2016).

Knowledge governance helps to define a PBO's knowledge-based objectives by providing direction to the knowledge-sharing processes within individual projects and serves to align them with the broader goals of the organization (Ali et al., 2018). However, Pemsel et al. (2014) stressed that the challenges associated with knowledge governance are especially significant in PBOs, which are temporary by nature. Knowledge governance mechanisms are necessary to obtain the greatest advantage from the knowledge created through project activities (D'Armagnac, 2015). Ghosh et al. (2012) argued that organizations that do not have a formal knowledge governance in place should adopt a project-focused knowledge governance approach. Pemsel and Müller (2012) focused specifically on knowledge governance mechanisms that would integrate project knowledge at the organizational level and observed that PBOs attempt to implement knowledge governance practices that combine various perspectives.

Organizational Learning

Organizational learning is a core organizational capability that creates competitive advantages (Molodchik & Jardon, 2015). It plays an important role in the acquisition, dissemination, and use of knowledge to adjust to an evolving external environment (Park & Eun-Jee, 2018). Cyert and March, who initially proposed the concept of organizational learning in the 1960s, stressed the importance of learning by

experience and the ways in which an organization may adapt to environmental changes (Castaneda et al., 2018). The concept of organizational learning was expanded upon by Argyris and Schon (1978) through the introduction of single and double loop learning as the core element of organizational flexibility.

Organizational learning appears in knowledge management processes at all levels of an organization (Argote, 2013). Odor (2019) viewed organizational learning as a means of gathering information to create knowledge and using that knowledge to improve the organization. An organization's knowledge base is constantly changing when the organization acquires new experience. This perspective stresses the role that experience has on the process where knowledge is accrued in the organization as its employees either perform or try to perform tasks (Echajari & Thomas, 2015). Organizational learning is the capacity of an organization to acquire the knowledge necessary to survive, sustain, and compete in its environment (Sathishkumar & Karthikeyan, 2017). Brandi and Iannone (2015) identified three perspectives on organizational learning. The first is learning by encoding inferences from history into routines that guide behavior, the second is a process of detecting and correcting errors, and the third is a constant evolution through social and cultural interactions. The three perspectives show a shift from formal learning to informal learning and are applicable in various organizational structures from bureaucratic (formal learning) to cultural structures (informal learning).

Organizational learning and knowledge management are two distinct concepts that in specific ways complement each other. Some of the significant components of organizational learning are knowledge creation, acquisition, sharing, and application. These components correspond to most definitions of knowledge management processes (Castaneda et al., 2018; Odor, 2020, Kordab et al., 2020). Hammoud (2020) summarized that organizational learning focuses mainly on the processes by which knowledge is created, acquired, stored, shared, and applied. One of the most prominent organizational learning features is the organization's ability to recognize the need to change and adjust. Knowledge management aims to create the organization's values through knowledge management processes (the creation, capture, storage, transfer, and implementation of knowledge). These values emphasize the need for individual knowledge to be available for everyone in the organization (Mitrevski & Aceski, 2017). Jaber and Caglar (2017) also asserted that organizational learning is complementary to knowledge management. Organizational learning is crucial in entrenching the knowledge gained into the fabric of a particular organization. However, it is entirely dependent on individual learning within a particular organization, while knowledge management is more of sharing within the institution.

Qi and Chau (2018) explained that knowledge management is closely related to organizational learning because it is a critical capability that provides organizations with a source of competitive advantage. Sathishkumar and Karthikeyan (2017) contended that organizational learning is accelerated through knowledge management by creating a

common knowledge repository, identifying and codifying competencies and routines, and manipulating information within and external to the organization. Castaneda et al. (2018) conducted a review of organizational learning and knowledge management research to determine if organizational learning was conceptually absorbed by knowledge management. They summarized that knowledge creation, acquisition, and transfer are characteristic processes of organizational learning. Another key element of organizational learning and a firm's competitive advantage is absorptive capacity.

Absorptive Capacity

Absorptive capacity is very important in maintaining the existence of the organization as it relies increasingly on external knowledge for enhancing innovation and performance (Rezaei-Zadeh & Darwish, 2016; Supartha & Kumala Ratih, 2017). Absorptive capacity is the ability of an organization to discover external knowledge in its environment. Once the external knowledge is discovered, it is acquired and incorporated into its knowledge management processes (Aribi & Dupouet, 2016). Cohen and Levinthal (1990) initially presented the concept of absorptive capacity as the ability of an organization to recognize the value of new external information and assimilate and apply it to existing projects. Absorptive capacity is influenced by prior knowledge, which regards basic skills and enables an organization to recognize, assimilate, and apply new information, contributing to innovation and organizational performance (Mariano & Walter, 2015). Grandinetti (2016) added that the constitutive elementary processes of absorptive capacity are the monitoring and assessment of new knowledge and its

assimilation and the subsequent use of this newly integrated knowledge. Mariano and Walter (2015) linked absorptive capacity to knowledge management processes such as acquisition, creation, and sharing.

Project-Based Organizations

More organizations now use projects, programs, and portfolios as primary methods for delivering new products and services in the current global economy. This new delivery method causes companies to organize in a project-based structure (Schacht et al., 2015). The PBO is different from other organizational structures. A PBO may either be a stand-alone company making products for external customers or a subsidiary of larger firms producing for internal or external customers (Koskinen, 2010). Stulgiene and Ciutiene (2012) added that PBOs are split into two groups: One group of PBOs carries out management by projects, and the second group gets their revenue through subcontracting with other companies under contract.

The PBO develops a majority of its products based on custom designs for its customers (Akhavan et al., 2014). In a PBO, the project is the main mechanism for coordinating all the key business functions of the organization (Rajhans, 2018). Projects are known as foundations of innovation and permit functions that cross the periphery of the organization. The PBO gets a benefit from the distinct and innovative nature of projects because project team members have the ability to be more creative and let fresh, new ideas emerge (Moud & Abbasnejad, 2012). An advantage of the PBO is that its

flexibility makes it well suited to incorporate different streams of knowledge and take on complex tasks (Miterev et al., 2017).

There are numerous benefits associated with the adoption of a project-based organizational structure. Some of the benefits are higher output quality, the ability to respond quickly and flexibly to each customer's needs, and the ability to innovate in collaboration with clients and suppliers (Di Vincenzo & Mascia, 2012). Bourouni et al. (2014) emphasized that PBOs have a higher level of flexibility than other organizational forms when applying and integrating different types of organizational knowledge and skills.

Di Vincenzo and Mascia (2012) contended that PBOs also present considerable challenges in promoting organization-wide and project-to-project learning. Projects function as distinct entities where the project team members are often geographically dispersed, potentially causing communication gaps among team members and between projects. Another consequence for geographically dispersed projects and teams is the knowledge transfer and learning process is hampered. This impacts effective project communication and learning from other projects (Akhavan et al., 2014). Projects have a tendency to isolate their team members from other professionals and their peers, leading them to become knowledge silos. Since projects are temporary, the lessons learned from the project after it ends and the teams are dispersed to other projects are sometimes not documented (Bashouri & Duncan, 2014). Based on these difficulties, Handzic et al. (2016) identified two challenges facing PBOs. The first is recognizing the current

project-related knowledge resources and what additional knowledge resources are needed to improve the rate of project success. The second challenge is understanding what mechanisms are needed to better manage these resources.

Knowledge Assets

Knowledge assets are beginning to become a crucial aspect for an organization's overall performance and competitiveness (Gomezelj & Antoncic, 2015). Knowledge assets are a critically intangible resource and not recorded on the balance sheet; however, they do have an impact on an organization's bottom line and competitive advantage (Killingsworth et al., 2016; O'Donoghue & Croasdell, 2009). Knowledge assets are seen as the accumulation of organizational skills and know-how in individuals that make the organization more competitive in the marketplace (Chun & Yoong, 2015). Swart and Kinnie (2013) viewed knowledge assets as a knowledge-based capital that creates value-based outcomes in the marketplace.

Knowledge assets represent various forms of capital. Mura et al. (2016) contended that knowledge assets are represented by organizational capital (knowledge available to employees via explicit knowledge) and social capital (tacit knowledge retrieved through collaborations with coworkers or clients). O'Donoghue and Croasdell (2009) viewed it in terms of human, structural, and innovation capital. Each of these knowledge assets can be joined to create IC, which takes the form of goods or services developed for customers (Swart & Kinnie, 2013).

Organizations may need to use different types and combinations of knowledge assets. It is important that organizations understand how knowledge assets are utilized in different business units and in an employee's role and which type of knowledge assets are important to their success (Handzic et al., 2016). Smith (2003) argued that a problem with identifying an employee's knowledge and abilities as an asset of the organization is that the organization can't possess people or their talents. The organizational assets that provide information and services reside in the human and social capital within that organization. Therefore, how well an organization can leverage their knowledge assets to create value can have a significant impact on its performance in the long term (Killingsworth et al., 2016).

Human Capital

People are a vital resource for all organizations, as they contribute to organizations' survival, development, and competitive success (Dădârlat & Dumitraşcu, 2015). Within an organization, employees are the most important source of competitive advantage and, consequently, of business performance (Gomezelj & Antoncic, 2015). The combined intelligence, skills, and talent within an individual gives an organization its unique character and is viewed as human capital (Massingham & Tam, 2015). Human capital has a positive influence on an organization's ability to be innovative and strategic (Vidotto et al., 2017).

Human capital refers to the skills, knowledge, talent, and experience that lives in the individual as well as strategic competencies that can't be easily imitated or copied

(Nafukho, 2009; O'Donoghue & Croasdell, 2009). The previous definition of human capital is not limited to just knowledge and skills. It also includes competencies that should be put into practice to develop organizational activities. Human capital is rooted in the members of an organization. Wang et al. (2014) explained that human capital represents the individual knowledge stock of an organization to achieve specific goals. The human capital theory proposes that people possess skills, knowledge, and abilities that provide economic value to organizations (Seleim & Khalil, 2011). Nafukho (2009) added to the theory by stating that individuals are motivated to invest in themselves in different ways by buying education and training. Vidotto et al. (2017) noted that the human capital perspective identified people as an asset that needs to be cultivated. Investments should be made in workplace training, health, and economic information. Furthermore, the investments should cover knowledge, skill, talent, behavior, commitment, and time. When employees are trained, their earnings will increase based on productivity (Nafukho, 2009).

Social Capital

Individuals rely on vibrant, creative, and trusting relationships (social capital) to produce valuable outputs (Swart & Kinnie, 2013). Social capital creates communication channels to bring about the creation and sharing of knowledge between individuals, groups, and colleagues (Bharati et al., 2015). Ramadan et al. (2017) argued that social capital provides the method for exchanging knowledge back and forth between social network members. Social capital is about social relationships with family, friends, and

colleagues (Felicio et al., 2014). Such social relationships give admittance to prized resources such as information, influence, and camaraderie, which empower action. Furthermore, social capital helps to facilitate the exchange of knowledge resources between organizational units, including business units, and projects (Bartsch et al., 2013). Furthermore, social capital focuses on creating strong ties between the organization and its clients (Nafukho, 2009). Social capital has varying definitions from different authors on the topic. Lee et al. (2015a) defined social capital as an integrated idea of resources, whether actual or potential, that an individual or a group acquires through a social system. Choi (2015) viewed social capital as a resource rooted in the relationships of individuals, communities, and networks.

Yu et al. (2013) contended that social capital provides stimulation for individuals to participate in sharing knowledge within work teams. Social capital has a valuable role in inspiring work groups to share knowledge because knowledge sharing is recognized as a collaborative activity that creates a major benefit for the group (Choi, 2015). A special form of social capital that is present in the relationships between team members is team social capital (Lee et al., 2015a). Team social capital can also be characterized as team bonding. It serves the purpose of a social glue, tying all team members together to work for a shared goal (Han, 2018). Lee et al. (2015a) related the building of team social capital to the level of knowledge on an I/S development project team as well as knowledge sharing. Lee et al. added that team social capital built and sustained among

team members serves as the starting point for knowledge sharing and working collaboratively to solve problems on I/S development projects.

Social capital serves as a catalyst for implementing knowledge management and a broker in the knowledge creation and IC relationship (Seleim & Khalil, 2011). Bharati et al. (2015) added that social capital enables knowledge management activities within and across the organization. The management of knowledge involves social interactions throughout the organization, and these interactions focus on the identification, creation, and sharing of knowledge between individuals, groups, and organizational units. At their core, these knowledge processes are supposed to assist in the building of social capital by building communities of practice (Ramadan et al., 2017).

Knowledge Retention

Knowledge loss has become a significant issue that could make organizations vulnerable in difficult economic times as well as during economic growth periods when the competition is widespread (Martins & Meyer, 2012). Since organizations cannot afford to lose knowledge, they need to retain knowledge from their employees before the employees leave. Knowledge retention is a process that organizations can use to reduce the risk of knowledge loss through processes like mentoring and coaching (Bratianu, 2018). Bairi et al. (2011) described knowledge retention as an action-oriented, grounded method of addressing the threat of knowledge loss.

Sumbal et al. (2018) suggested that to retain knowledge in an organization, there are three steps in the process: (1) identifying critical knowledge, (2) transfer critical and

undocumented knowledge, and (3) integrate the retained knowledge for reuse in business processes. In a multicase study of four organizations, Daghfous et al. (2013) concluded that strategies that focus on the retention of knowledge and its integration into the organization's processes and routines would be useful to mitigate knowledge loss. Various strategies such as training, social networks, communities of practice, succession planning, and leveraging retired knowledge workers can be used to retain knowledge in organizations (Chigada & Ngulube, 2016; Makhubela & Ngoepe, 2018).

Knowledge retention can have both positive and negative effects on an organization. Bessick and Naicker (2013) identified talent management (recruiting and mentoring), job satisfaction, and organizational commitment as barriers to knowledge retention. Schmitt et al. (2011) argued that retained knowledge hides inefficiency and rigidity and can prevent adjustment to new situations. On the positive side, knowledge retention helps to control transactional costs. A challenge facing organizations is the lack of a defined knowledge retention process and understanding of its importance (Raudeliūnienė et al., 2018). Wikström et al. (2018) contended that knowledge retention needs to be well integrated into an organization's business operations and should start before key employees are about to leave or retire. Makhubela and Ngoepe (2018) recommended that organizations enforce knowledge retention policies in order to achieve their objectives.

Knowledge Loss

The key to success for organizations in the current economy is to leverage their ability to use existing knowledge to create new knowledge. Most of the time, organizations ignore the importance of knowledge and fail to capitalize on its benefits. Managing knowledge is an essential rule for organizations to remember (Sumbal et al., 2018). The possible consequence of not managing that knowledge is to lose it without retaining it.

Knowledge loss is the result of a more mobile workforce, employees nearing retirement, employee turnover, and disability (Bratianu, 2018; Massingham, 2018). The impact of knowledge loss can be felt at the organizational level in terms of skills shortages. Rashid et al. (2019) noted that knowledge loss not only impacts project quality and employee productivity but threatens project sustainability. Knowledge loss impacts organizations in different ways. The first impact is the organization's credibility with its customers. The second impact is the length of time to train new employees to replace retiring employees. The third impact is the decrease in revenue, and the final impact of knowledge loss is for organizations to acknowledge the need to establish a knowledge management system.

Knowledge loss is assumed to have a negative impact on an organization; however, Jennex (2014) noted that there are rare instances where knowledge loss can have a positive impact. One such example is when the expertise lost is no longer incorporated into an organizational product or service. Massingham (2008) studied the

impact of knowledge loss through the remaining employees or survivors. These employees are affected by the capital type (human, social, structural, and relational) and activity, such as using social capital to create new knowledge, perform various team or organizational activities, and solve project problems.

The risk of knowledge loss is defined as the potential impact on an organization concerning efficiency and productivity due to the loss of a subject matter expert or knowledge worker (Sumbal et al., 2018). Knowledge loss is gradually becoming an organizational risk for two reasons: The first reason is the changing global demographics that can impact the workforce, and the second reason is employee turnover increasing because of changes in the relationship between employers and employees (Massingham, 2018). The risk of knowledge loss increases when dealing with employees with specialized knowledge and expertise of the organization's goals and strategies. When employees choose to leave the organization, the time frame to transfer knowledge may be shortened, and the shortened time frame creates specific challenges if the employees had specialized knowledge (Levallet & Chan, 2019).

Organizational Factors That Can Impact Knowledge Loss

This section identifies and addresses three factors organizations deal with that can have an impact on knowledge loss. It begins with a discussion of employee turnover, then organizational culture, and concludes with leadership. Each section also includes a brief discussion of how the issue has an impact on knowledge loss, knowledge management, and PBOs.

Employee Turnover

One of the most detrimental problems facing organizations today is employee turnover (Hana & Lucie, 2011). Kanade et al. (2015) stressed that employee turnover is a growing problem for any organization because it can create negative bottom-line impacts. The financial costs of employee turnover can amount to thousands of dollars on an annual basis. Furthermore, employee turnover prevents companies from pursuing growth opportunities and acquiring new business. Employee turnover inflicts heavy costs on organizations, both directly in terms of recruitment and induction costs and indirectly in terms of organizational knowledge and skills (Arora, 2015). Devi and Krishna (2016) stated that employee turnover reduces the effectiveness of the organization by impacting its productivity rate and also diminishing the morale of present employees working in the organization. Losing skillful, competent employees creates a problem in teamwork and leads to the incurrence of extra costs for replacements (Kuruppuge & Gregar, 2018). The financial and organizational costs caused by employee turnover can have a lasting impact on an organization.

There are varying definitions of employee turnover. Chauhan and Patel (2013) defined employee turnover as a replacement cycle, in which a new employee has to be hired and trained against a vacancy. Novak et al. (2013) understood employee turnover as the final (permanent) departure of employees from the organization. It occurs when an employee leaves the organization and has to be replaced. Another term considered for employee turnover is attrition, which is defined as a reduction in the number of

employees in an organization through layoffs, resignation, retirement, or death (Arora, 2016; Showry & Sayulu, 2017; Umasankar & Ashok, 2013). Voluntary and involuntary are two separate and distinct categories of employee turnover. Voluntary turnover is started by the employee (Chauhan & Patel, 2013; Marsden, 2016), and involuntary turnover is initiated by the organization to dismiss an employee because of poor performance, organizational restructuring, or the bankruptcy of a business (Chauhan & Patel, 2013; Marsden, 2016). Marsden (2016) added two more categories for employee turnover, as follows: Functional turnover is when an organization fires or loses employees whose talents are easy to replace. Dysfunctional turnover is the exit of employees who are high performers with hard-to-replace skills. Dysfunctional turnover can also erode an organization's workforce diversity when some of the departures are women or members of a minority group.

The impact of employee turnover can have both desirable and undesirable effects. Some of the undesirable effects include the organization's failure to use the knowledge gained by the leaving employee, a decrease in employee morale, and increased demands placed on other employees during the employee turnover period (Hana & Lucie, 2011). Lin et al. (2016) explained that high employee turnover rates can impact employees' performance, their social network at work, and knowledge sharing, while hindering the knowledge flow across organizations. Johansen (2013) also added that high turnover can affect employee and organizational morale and disrupt the organization's social and communication patterns. Employee turnover may benefit the organization in some cases

by having desirable effects (Johansen, 2013). Hana and Lucie (2011) identified the desirable effects of employee turnover, such as new recruits bringing in new contributions and ideas, no stagnation within the organization, and the opportunity for a more suitable employee with broader knowledge and experience to be recruited and hired.

Organizational Culture

Culture is important for companies and other organizations to function well (Ilies & Metz, 2017). It is sometimes used to show the climate, practices, values, and beliefs that organizations develop through their members (Chitsazan et al., 2017). Dauber et al. (2012) explained that organizational culture is seen as a key factor in examining organizations in different contexts such as its importance to establish competitive advantages and its impact on organizational performance. Organizational culture can even be a source of sustainable competitive advantage because it generates a mechanism to adapt to change, gain influence, and stay competitive (Widjaja & Kuslina, 2018).

Organizational culture is the pattern of basic assumptions shared by a group as a result of their experience (Daher, 2016; Widjaja & Kuslina, 2018). Fong and Kwok (2009) viewed organizational culture as the values, assumptions, and expectations that serve as a filter through which strategies are determined. Yazici (2011) described organizational culture as a complex set of knowledge structures that members of the organization use to generate social behavior. Ganescu and Gangone (2017) added that organizational culture is the accumulation of all shared, taken-for-granted assumptions

that a group has learned throughout the organization's history. The term *organizational culture* indicates a typical view of an organization characterized by a stable set of meanings and is a vital factor in influencing behavior and results within organizations (Ilies & Metz, 2017).

Organizational culture is prominent in the construction of IC (Asiaei & Jusoh, 2015). It is pivotal to the value of IC because of the impact it has on the development of key components of IC, specifically human and social capital (Nhon et al., 2018). Nazari et al. (2011) recommended that an organizational culture should not be changed to adapt to an IC management system because it would be more challenging to change the culture since it is deeply entrenched in the organization. Not only has organizational culture been shown to have an integral value to IC, it is also viewed as a component of IC. Sanchez-Canizares et al. (2007) proposed a model to measure IC where culture capital (a combination of national culture and organizational culture) is considered as the main capital. Khoramin et al. (2014) reviewed different models of IC to show that culture is recognized as the main capital. The connection between organizational culture and IC shows that culture is a component of and has value to the development of IC.

Leadership

Leaders have an important role and significant position of influence within their organizations and on the performance of their team (Micic, 2015; Yang et al., 2014). Micic (2015) added that the influence of leaders is seen in the effect of their ideas, their ability to inspire change, and their capacity to constantly learn and share knowledge with

other members of the organization. Leadership is a process where an individual influences and motivates a group to achieve a common objective (Banerjee & Ray, 2016; Koohang et al., 2017). Koohang et al. (2017) argued that effective leadership leads to job satisfaction, sound knowledge management, and improved organizational culture and performance. Leadership is an important concept, and effective leadership is required at all levels of an organization.

The role of leadership in managing knowledge is important to organizations (Yang et al., 2014). Leaders deal with knowledge at three different levels: the individual level, the group level, and the organizational level (Riaz & Khalili, 2014). Singh (2008) stressed that the goal of creating and managing knowledge for competitive advantage in organizations is facilitated by the kind of leadership practices that are in place. Micic (2015) conducted a study that identified four leadership styles (charismatic, transformational, team, and network) and the role each style has during the knowledge management process. In that study, Micic concluded that each phase of the knowledge management process needs a different leadership style adapted to it. Koohang et al. (2017) studied that the implementation of knowledge management processes in organizations is promoted by sound leadership. The knowledge management implementation improves organizational performance.

Summary and Conclusions

Knowledge is seen as a major driver of business success and a powerful asset for organizations (Pemsel et al., 2016; Ren et al., 2018). Knowledge management plays an

important role in organizational productivity, efficiency, and competitive drive (Singh & Gupta, 2014) because it facilitates learning and enhances the capacity to adapt and be flexible (Mageswari et al., 2016). The literature review emphasized two knowledge management processes: knowledge creation and knowledge sharing. The accumulation of knowledge in organizations, also known as knowledge creation, is a combination of internal knowledge development and external knowledge assimilation, otherwise known as absorptive capacity (Martelo-Landroguez & Cepeda-Carrión, 2016). Knowledge sharing is crucial for knowledge management because individual knowledge is not useful to the organization unless it is shared (Mageswari et al., 2016). Mageswari et al. (2016) further noted that knowledge sharing is a crucial knowledge management process for knowledge creation, productivity, innovation, and quality improvement. When knowledge is not shared or retained, it can be lost to the organization.

The gap in the literature identified in relation to this study is how factors such as employee turnover, organizational culture, and leadership increase the risk of knowledge loss. Knowledge retention can help to lessen the risk of knowledge loss; however, what is unclear is the knowledge retention strategies that managers implement to help mitigate the risk. Ajmal and Koskinen (2008) noted that organizational and professional cultures need to be merged together to promote useful knowledge management within PBOs. The impact of employee turnover on an organization results in knowledge loss, which, according to Massingham (2018), can be addressed with appropriate knowledge management. The current research is needed to explore and understand management and

leadership's role in managing knowledge assets and which proactive measures are taken against the issues presented in this chapter. Chapter 3 includes an examination of why I selected a qualitative research approach for this research study and the suitability of the case study design. The chapter also presents the research problem, participant process selection, data collection method, and implications of the research method so that other researchers can replicate this study.

Chapter 3: Research Method

The purpose of this case study was to explore knowledge retention strategies to prevent knowledge loss in PBOs. The results of this study may help management develop a knowledge governance approach to ensure that existing knowledge management processes are effective in addressing knowledge retention. Chapter 3 includes a description of the research design and rationale as well as the method and the justification for adopting the research approach. The discussion of the method used for this study includes a description of the population of the study, the research design and rationale, and the ethical approaches used to ensure confidentiality and protect the respondents from unwarranted consequences. Also covered in Chapter 3 are discussions on data collection techniques, data collection organization methods, and the data analysis plan. Finally, this chapter addresses issues of trustworthiness with the study.

Research Design and Rationale

The general research question for this study was as follows:

RQ1: What strategies do managers use to prevent knowledge loss?

I examined quantitative, qualitative, and mixed-methods research designs to determine the most effective approach to answer the research questions listed above. Cameron and Molina-Azorin (2014) defined the mixed methods approach as a research design with philosophical assumptions that guide the collection and analysis of data and the mixture of qualitative and quantitative data in a single study or series of studies. The central idea of mixed methods research is that the use of quantitative and qualitative

approaches together provides a better understanding of research problems than either approach alone. The research question in this study did not involve statistical measurements and did not need data analysis to identify trends and relationships. I concluded that a mixed method research approach was not appropriate for this research study.

Quantitative research is concerned with collecting and analyzing data that are structured and can be represented numerically (Goertzen, 2017). Zyphur and Pierides (2017) noted that quantitative research is often done in terms of representation and correspondence. This research design can be thought of as a series of *what* questions (Barnham, 2015). However, this research study does not have a series of *what* questions to answer, nor is it concerned with collecting and analyzing data that is structured and can be represented numerically. Based off of this analysis, the quantitative research approach was not suitable for this research study.

I selected a qualitative research approach because the study was about the experiences of participants and the perceptions of leaders. Qualitative research study is mainly naturalistic, interpretive, and inductive (Mayan, 2016). Mayan (2016) further argued that qualitative researchers strive to understand a specific phenomenon and the meaning of the experiences linked to the phenomenon. A qualitative approach has the advantage of providing a deeper understanding of a workplace or social environment through descriptions of the phenomenon from the participants' point of view. Park and Park (2016) asserted that the goal of qualitative research is to explore and understand the

descriptive accounts of various social events, recognizing the similarities and differences between difference accounts of the same event. This method focuses on applied and theoretical findings or discoveries. Florczak (2017) explained that the ultimate purpose of qualitative research is a detailed understanding of a phenomenon. This explanation is in contrast to the goal of quantitative research, which is to calculate and thus control a phenomenon.

Five research design approaches were examined to determine which approach was best suited for this study: grounded theory, ethnography, case study, narrative, and phenomenology (Kruth, 2015; Percy et al., 2015). I did not consider the narrative research approach for this study because it relies on recounting stories to describe personal experiences to elaborate an understanding of life experiences. The stories are tools individuals use to build a sense of their experiences and the vehicles by which they share them with others (Berry, 2016). Ethnographic research was not a suitable approach for this study because it is concerned with describing the culture of people and their behavior (Draper, 2015).

Phenomenology stresses the nature of the human experience and the meaning that people attach to their experiences (Reiter et al., 2011). Phenomenological research is focused on the experience that is being examined, not on the individuals who are having the experience (Kruth, 2015). Matua (2015) added that phenomenological research informs the understanding that reality is best understood from those who have firsthand experience. Mohajan (2018) expressed that the focus of phenomenological research is

relating what participants have in common when they experience a phenomenon. The focus of this research study was not to understand a specific phenomenon through the people who have experienced it, so the phenomenological approach was not appropriate for this study.

Bryant and Charmaz (2012) argued that grounded theory is one of the most popular qualitative research methods utilized across a wide range of disciplines and subject areas. Grounded theory research attempts to create a theory of an event, phenomenon, or experience from an exploration of interviews with participants and co-researchers (Kruth, 2015). However, this study was based on a conceptual framework comprised of the KBV of the firm and IC. Based on the conceptual framework, I did not select grounded theory as a qualitative research approach.

I selected the case study research approach because I intended to look at and understand how to prevent knowledge loss that impacts project productivity in PBOs. Case study research is the exploration of a bounded system from multiple perspectives. The term *bounded system* refers to a single case that can easily be differentiated from other cases. The case is the object of the study, and that case may be an individual, an event, or a series of events clearly bounded and differentiated from other events (Kruth, 2015). Case study research allows the researcher to explore the phenomenon from different viewpoints to get a detailed, balanced image of the phenomenon (Taylor & Thomas-Gregory, 2015).

Role of the Researcher

The qualitative researcher plays the role of an instrument through which data are gathered and interpreted. Khan (2014) stated that the researcher should play a neutral role to avoid bias in data collection and to ensure a reasonable interpretation of the results. The case study research approach was an appropriate means for this research study because my role was to gain a deep holistic view of the research problem (Baškarada, 2014). Specific to case study research, Yin (2014) presented the desired attributes a researcher should have: (a) ask good questions, (b) be a good listener, (c) stay adaptive, (d) have a firm grip of the topics being studied, and (e) avoid biases. Being a good listener as a researcher means having the ability to integrate large amounts of new information devoid of bias (Yin, 2014).

My role as a researcher conducting a single case study included (a) designing the study, (b) collecting evidence that related to the research problem, and (c) analyzing and reporting the findings (Yin, 2014). The pool of participants for this study included managers, senior managers, and consultants who work on concurrent projects for a government consulting practice within a consulting firm. Although I work with some of the individuals who formed part of the study sample, none of participants come under my immediate supervision. I am an employee of the consulting firm and have a vested interest in the successful completion of the project. To manage any bias, I acknowledged the expectations I had about the outcome of the research study and avoided

generalizations that aligned with my personal views. My relationships with the study participants are on a professional level.

To prevent any researcher bias from affecting my current work relationships, I used a semi-structured interview protocol. The questions on the semi-structured interview tool were open-ended, with the opportunity for further discussion of each response. The topics that the semi-structured interview tool addressed aligned nicely with the research questions in this study. The semi-structured interviews took place either face-to-face or through a web-based video conferencing service with recording capabilities. I recorded each interview and transcribed the recorded interview after it was completed. One step in the data collection and analysis process involved debriefing the participants after the completion of the interviews and allowing them to review the interview transcript to validate that their responses were what they intended to share regarding the subject matter. At the conclusion of the research study, each of the participants received a description of the findings of the research.

Methodology

The case study research design was used in this study. The following is a description of the methodology I applied to the case study exploring knowledge retention strategies to prevent knowledge loss in PBOs. The design of this study included semi-structured interviews to collect information on stakeholder perceptions of knowledge loss and knowledge retention strategies within a PBO. I conducted semi-structured interviews using a web-based computer application that could record the audio from the interviews.

This web-based application was free for the study participants and would have allowed me to reconnect with each participant if the audio was interrupted in the middle of the interview. I used a software tool to convert the recorded audio from the interviews into a transcribed document format. Each recorded and transcribed interview went through NVivo software analysis so that I was able to identify trends and themes that were similar across several study participants. The following sections include details regarding the participant selection process, instrumentation, sampling strategy, data collection procedures, and data analysis plan. A plan outlining the data collection and coding process is also discussed.

Participation Selection Logic

Robinson (2014) noted that sampling is an important aspect of qualitative research design; however, it does not receive much attention in research methodology textbooks and journals. Anderson (2010) noted the differences in sampling between quantitative and qualitative research studies. For example, it is important to choose probability samples in quantitative studies so the statistics can be used to give overviews to the population where the sample was pulled. However, in qualitative studies, a smaller sample size is necessary because of the in-depth and thorough work needed.

Purposeful sampling is arguably the most frequently used method of sampling in qualitative research literature today (Gentles et al., 2015). It is a widely used technique for the identification and strategic selection of information-rich cases for the most effective use of limited resources (Palinkas et al., 2015). These cases, by their nature and

substance, will illuminate the question being investigated (Bungay et al., 2016). Purposeful sampling involves the selection of particular individuals with characteristics relevant to the study who are thought to be the most informative.

Sample size in qualitative research is unclear, because it relies on the answers being sought, the framework, whether that is theoretical or conceptual, the type of data collected, and the amount of resources and time available to the researcher (Butina, 2015). Mason (2010) argued that sample size can vary depending on the methodology used in the research study. Sample size depends on what a researcher wants to know, what the purpose of the research inquiry is, what will have credibility, and what can be accomplished with the available time and resources (Marshall et al., 2013). Smaller sample sizes are used in qualitative research studies because the goal of sampling is to obtain information that is useful for understanding the complexity, depth, variation, or context surrounding a phenomenon (Gentles et al., 2015).

Saturation is a crucial aspect to consider when making sample size decisions in qualitative research (Mason, 2010). Saturation is the point at which the data collection process no longer offers any new or relevant data (Boddy, 2016; Dworkin, 2012). Fusch and Ness (2015) added that a study reaches data saturation when there is enough information to duplicate the study and when additional data coding is no longer viable. However, it is important to note that saturation gives little direction in estimating the sample's actual size before data collection occurs (Boddy, 2016).

Considering the purposeful sampling approach, approximately 24 managers, full-time employees, and consultants who are either currently working or previously worked on a project within a project-based organization comprised the population size. Participants who are managers were required to have at least 3 years of experience managing a project. Participants who are either full-time employees or consultants should be currently working on a project or previously worked on a project. Knowledge loss directly impacted the population sample size. If some of the potential participants elected not to participate in the research study, there was still a sufficient sample to collect interview data from different perspectives. The tools I used to contact these individuals and to recruit them to participate in the study included the social media platform LinkedIn and email. I asked the participants if they were willing to respond to semi-structured interview questions that reflected their experiences working in a project-based organization and what strategies to retain knowledge were implemented and enforced by management to prevent knowledge loss.

Instrumentation

The purpose of this case study was to explore knowledge retention strategies to prevent knowledge loss in PBOs. The data collection instruments used in this study were an interview template and protocol along with an audio conference recording software. Adams (2010) noted that interviews are one of the main methods of data collection in qualitative research and are used in research that doesn't produce objective or quantifiable data. Hawamdeh and Raigangar (2014) added that an interview is a

communicative event with cultural norms and rules. The interview could be misunderstood or even terminated early if the content or style is inappropriate. Therefore, the interview should be treated as a two-way process of gathering and giving information.

Semi-structured interviews were conducted for this case study. This type of interview was selected because, as Adams (2010) noted, semi-structured interviews are conversations where the outcome is a coproduction of the interviewer and the subject. Adams (2010) also noted that the goal of semi-structured interviews is to explore the experiences of the research participants and the meanings they attribute to those experiences. Rossetto (2014) emphasized that researchers must maintain boundaries to protect the researcher-participant relationship and ethical obligations to do no harm. Roulston (2016) stressed that the successes and failures in generating detailed reports from interviewees are commonly understood as prompted by the interviewer's actions. Efficient management of interactional problems is essential for the success of the interview.

The researcher-developed interview instrument consisted of open-ended questions used to elicit the perspectives of the participants on the strategies to retain knowledge and prevent knowledge loss in PBOs. I used purposeful sampling and semi-structured interviews to address the research questions. Palinkas et al. (2015) stated that purposive sampling allows the researcher to choose the sample unit based on features or characteristics that enhance exploration and understanding of the central themes and questions that the researchers wish to study. The guiding framework of the research

question is a descriptive and interpretive format consistent with qualitative research methodology (Bloomberg & Volpe, 2012). In consideration of this planned approach, the sample comprised managers and consultants with a sample size of 24 personnel from a single unit.

Pilot Study

A pilot study was developed to determine the clarity of the instruments and eliminate potential ambiguity from the questionnaire. Four participants were selected to determine the simplicity of the instructions and interview questions. The participants in the pilot study were disengaged after I adopted feedback. Furthermore, the four participants were selected from the participant pool for the final research study.

Wray et al. (2014) emphasized that a pilot study is a smaller version of the main study used to test whether the instruments of the main study will work as expected. The goal of a pilot study is not to produce results but to check if the sampling strategy is sound, make sure the instruments and data collection schedules are clear, and discover any barriers to the research study (Watson, 2016). The feedback I received from the participants guided me in rephrasing or administering the questions as crafted. The purpose of the pilot study was to determine the level of understanding of the questions by the participants and to remove any ambiguity. The feedback from the pilot study provided additional information that enhanced the quality of the interview questions and the need for additional resources. Responses from the pilot study provided an additional source for confirmability.

Data Collection

This section describes the procedure for data collection, including the location, timing, and individuals involved. This section also includes what characteristics qualified an individual to be a participant in the study. This section concludes with a brief discussion of the data collection protocol, participant privacy concerns, and data saturation.

I collected data consisting of the responses given during semi-structured interviews from managers and consultants who work in a PBO. The boundaries for this case study came from the configuration that all of the participants were currently working on or had previously worked on a project in the preceding 6–12 months under a project management office. All projects under a project management office varied in size and scope. Therefore, a single project management office was the definition of a bounded case. As Yin (2014) noted, obtaining informed consent is an important aspect in conducting ethical research. The letter of consent was presented to each participant for his or her review, acceptance, and signature before applying the instrument. The letter of consent included my contact information, the participant selection criteria, the purpose of the research, and any potential risks resulting from participating in the study. It clarified the voluntary nature of involvement in the research study and provided information on how participants may exit if it became beneficial to withdraw from the study.

The data collection protocol consisted of semi-structured interviews using an audio conference software to obtain the necessary data for the study. The data collection

process was planned to last five weeks. Each interview was recorded. Interview questions were available to the participants prior to the interviews, which lasted approximately 15–30 minutes. If a participant was unable to participate, he or she could respond to the interview questions in writing. All efforts were made to conduct the interview via the audio conference software and only in unusual circumstances were telephone interviews used as another option. The identities of the participants were kept anonymous to protect their privacy. Data saturation was considered to have been reached when no new information was received from the participants.

Data Analysis

This research study was based on the following research question: What strategies do managers use to prevent knowledge loss? The data included information about how participants understand knowledge management processes as well as how effective knowledge management processes are when the organization faces challenges related to employee turnover, leadership, and culture. Whether the participant was a manager or consultant, the interviewer asked all the semi-structured interview questions to obtain information about the role that knowledge management may have played in each individual's perceived effectiveness on their project team.

I took field notes after each semi-structured interview to record my thoughts and impressions of the interview. I used descriptive coding in the first cycle of coding analysis. Descriptive coding allowed me to describe the participants' responses to the interview questions. Descriptive coding is used to summarize in phrases the basic idea of

a passage of data, which contains the content of the message (O'Brien et al., 2018). I employed pattern coding, a process that pulls together several data items into thematically linked categories, and focused coding, which distills the most meaningful themes of the data from the most frequently applied codes, for the second cycle of coding analysis (Miles & Huberman, 1994; Saldana, 2009).

The software for analysis of the collected interview information included UberConference, Dragonfly Naturally Speaking Version 13, NVivo 12 for Windows, and Microsoft Word and Excel for Windows Version 1902. UberConference is a free, web-based application that allows individuals in different locations to conduct an audio conference. If the audio stopped during the middle of the interview, the interview would either have been restarted from the beginning or resumed. The semi-structured interviews were captured via UberConference, resulting in a recording of each semi-structured interview. Dragonfly Naturally Speaking is a tool that processes the recorded interviews from UberConference and converts the recordings into transcripts in rich text format, which I converted into a Word document using the Microsoft Word for Windows software. I believe using Dragonfly Naturally Speaking reduced the need for manually typed transcriptions. If there were any inaccuracies with the transcriptions, I would have listened to the audio recordings while viewing the Dragonfly Naturally Speaking transcripts and made the needed corrections to the transcripts until they matched what I heard the participants say on their recordings. The Microsoft Word transcripts were loaded into the NVivo software in the appropriate format for parsing, coding, and

identification of patterns. I used the NVivo 12 for Windows software to organize the coded information collected from the interviews. This software provided an analysis of any patterns that exist in the collected data. The NVivo package also includes training and an introduction to the most productive methods for using the qualitative data coding software, which are an important element for understanding where unexpected connections may exist within the data after the completion of data collection.

Because of the nature of this single case study, there were likely to be participants whose responses were significantly different from those of other participants or from the expected responses to the interview questions. If a situation were to occur where a respondent's information represented a significant outlier from the other data or did not fit the conceptual framework that underpins the study, I documented the outlier. Patton (2015) noted that data analysis for qualitative research is complex and time-consuming; the challenge is making sense of the massive amounts of data collected. Yin (2014) added that data analysis for case study research is challenging because the methods have not been well defined.

Issues of Trustworthiness

Connelly (2016) referred to the trustworthiness or rigor of a study as the amount of confidence in data, interpretation, and methods used to ensure the quality of a study. Using the concept of trustworthiness, Guba and Lincoln (1994) provided alternative criteria for qualitative research, as follows: credibility, transferability, dependability, and

confirmability. This section of chapter 3 will address these alternative criteria for trustworthiness.

Credibility

Credibility is the believability of the research findings and process. Cope (2014) explained that credibility is improved by the researcher describing their experiences and verifying the research findings with the study participants. Houghton et al. (2013) confirmed that credibility refers to the value and believability of the research. A researcher's experiential knowledge and worldview may introduce the element of bias into the qualitative research process, which may affect the credibility of research findings (Maxwell, 2013). Yin (2014) pointed out that there can be a lack of trust in the credibility of a case study researcher's processes. I ensured adherence to qualitative methods and instruments to achieve credibility for this research study. To maintain validity in qualitative research, member checking is applied (Candela, 2019). Member checking involves asking research participants to review interview data for accuracy; participants may also be invited to review research results (Birt et al., 2016). Baillie (2015) argued that member checking gives the researcher an opportunity to ensure the accuracy of the participants' voice by allowing them to confirm or deny the interpretations of data. Birt et al. (2016) also suggested that the credibility of the research findings is the basis for transferability of those conclusions. I conducted member checking to achieve credibility. Member checking provided an opportunity for the participants to give feedback regarding the interview and any inferences drawn from the comments. An agreement with the

interview transcript through member checking and a confirmation of the absence of bias in my reporting were sufficient to render this study credible. Finally, I ensured clear statements of any bias that may have arose in the course of the study which could have added to the credibility of my research.

Transferability

Transferability of research findings is best described as the criterion for evaluating external validity (Hammarberg et al., 2016). Transferability is defined as whether or not particular research findings can be transferred to a similar study while maintaining meaning from the completed study (Houghton et al., 2013). The nature of transferability, or the extent to which findings are useful to persons in other settings, is different from other aspects of research in that readers actually determine how applicable the findings are to their situations (Connelly, 2016). Yin (2014) pointed out that transferability occurs when a research study offers detailed descriptions of the population of the study, sources of the data collected, demographics, and boundaries of the study. Rigor is used by researchers to create consistent methods to duplicate a study, creating transferability, credibility, dependability, and confirmability of the research (Thomas & Magilvy, 2011). Adopting the rigor presented enhanced the transferability of this study. Additionally, I used thick description as a method of providing external validity for this research study.

Dependability

Dependability is attained when the replication of the study using the same or similar participants and contexts produces the same findings (English, 2015). Munn et al. (2014) added that dependability is recognized if the research process is traceable and clearly documented, while Gelling (2015) explained that dependability demonstrates to readers that the findings are reliable and repeatable. The objective of the case study approach is to ensure another researcher following the same procedures explained by a previous researcher should arrive at the same findings and conclusions (Yin, 2014). Detailed field notes and recordings from the video conferencing were taken from the interviews in the present study. Yin (2014) stressed that each step of the research process should include data on the process itself to ensure reliability.

My research study ensured an audit trail by (a) presenting the purpose of the study, (b) describing the selection process for the study participants, (c) describing the data collection process, (d) demonstrating how the data were interpreted and analyzed, (e) discussing the research results, and (f) communicating techniques to determine the credibility of the data (Thomas & Magilvy, 2011). I checked the interview transcripts to eliminate any ambiguity or mistakes. I also ensured that the coding aligned with the actual meaning by consistently comparing data with the codes. I cross-checked codes by engaging a colleague who helped me to double check the code frequency to ensure agreeability. I used rich, thick description to explain the findings. In-depth description

helps the reader to have a better understanding of the setting and conveys shared perspectives.

Confirmability

Analogous to objectivity in quantitative research, confirmability is the degree to which findings are consistent and could be repeated (Connelly, 2016). The qualitative researcher, as the main research instrument, interacts with the study participants and is responsible for the data analysis. The interviews were transcribed and sent to the participants for validation, ensuring the confirmability of the data in this study and avoiding researcher bias. The transcribed data were stored in NVivo and were to be used, if needed, as an audit trail to ensure that the participants' views were reflected in the data and analysis.

A qualitative researcher who uses reflexivity will be open about their strengths and shortcomings, examines their effect on the research setting, and will note others' reactions to them (Baillie, 2015; Halcomb & Peters, 2016). During this study, I used a reflexive journal to guard against researcher bias and assist in my reflexivity.

Ethical Procedures

Ethics is a key aspect of social and scientific research. Ethics in research is applicable to the judgment while taking into consideration the actions applied, whether right, wrong, or appropriate, in the entire research processes (Gaus, 2017). Peter (2015) argued that while qualitative research is not as risky as quantitative research, there are

some features of qualitative research that a research ethics committee must be able to recognize to review qualitative protocols effectively.

This research study is subject to review by Walden's Institutional Review Board (IRB) to ensure procedural ethical guidelines were followed. Letters of consent for conducting interviews were provided to the study participants. Copies of each letter were provided to the IRB for the approval process. Participant confidentiality for all information gained during the research was to be maintained.

I sought out participants who were managers and consultants currently working in a multi-project environment. There was no incentive to participate in the study, and participants could withdraw their participation at any stage of the process as stated in the consent form. Information that could identify each participant, project, and organization was omitted to preserve the privacy of the participants and the confidentiality of data. All data collected were to be encrypted as archive files and stored on an external hard drive after the completion of the study and destroyed after three years.

Summary

The purpose of this case study was to explore knowledge retention strategies to prevent knowledge loss in PBOs. The use of semi-structured interview questions served as the frame for discussion of knowledge loss in this study. The interview process allowed for the participants to articulate their experiences with knowledge loss in PBO. Chapter 3 included information on the research design and the rationale for the selection of the qualitative research approach and case study research design. The role of the

researcher and the methodology, which included the recruitment method, choice of participants, data collection, and plan for the coding and analysis of the data, were addressed in this chapter.

Chapter 4: Results

The purpose of this case study was to explore knowledge retention strategies used by managers to prevent knowledge loss in PBOs. This study included semi-structured interviews of managers and consultants within these organizations. The central question was as follows: What knowledge retention strategies do managers use to prevent knowledge loss? In Chapter 4, I describe the pilot study detailing the impact on the study, the research setting, participant demographics, data collection methods, data analysis procedures, evidence of trustworthiness, study results, and a summary of the chapter.

Pilot Study

I conducted a pilot study with two participants to determine the suitability of the interview questions. The purpose of the pilot study was to determine the level of understanding of the questions by the participants and to identify any potential ambiguity. The pilot study also helped to confirm the suitability of my audio recording instrument. The pilot study enhanced the credibility of the interview questions. The advantage of the pilot study was that it gave me insights on where the research project could fail and where the research protocol could slow down the process.

The feedback I received from the pilot study participants identified ambiguity and redundancy in some of the questions during the interview. The meaning of knowledge retention was understood throughout the interview, and the logic and intention remained consistent. Following simplification of the questions in the interview instrument, the pilot participants agreed that the interview questions were clearer. Confirmability was

enhanced by the pilot study. At this stage, I disengaged the participants from the study. Appendix C contains the interview questionnaires.

Research Setting

There were no organizational conditions that influenced the participants' responses to the interview questions. I recruited the participants in this research study using the LinkedIn networking platform. The selection criteria I used to determine the participant's role was (a) a manager with 3 to 5 years of experience managing a project team, (b) a consultant with 2 to 5 years of experience working on a project team, or (c) a full-time employee with 2 to 5 years of experience working on a project team. Once I identified the potential participants, I followed up with them via email. I sent them a link to the online consent form and a brief survey to determine whether they were a manager, consultant, or full-time employee. Once the participant gave consent, I scheduled an interview on an agreed-upon date and time via email. I conducted the interviews via Zoom with limited to no interruptions. The semi-structured interview format enabled participants to become and remain fully engaged during the interview. The participants were aware of the confidentiality agreement and expressed themselves openly and without incident.

Demographics

There were eight participants in the study, all of whom worked in a PBO. Five of them were managers, and three were full-time employees. All of the participants were at least 30 years of age, and none of the participants were in any way vulnerable as a result

of participating in this study. All of them were able to provide their perspectives and insights within their organizations. Table 1 provides demographic information of the eight participants. All of the interviews were conducted using Zoom, which captured the video and audio recordings. Each of the interviews ranged from 25 to 42 minutes. The given pseudonyms are in XY format so that the X is presented by the letter M for *Manager* or C for *Consultant* and Y is the number identifier assigned to each participant.

Table 1

Participant Profiles

	Gender and age	Job role	Pseudonym
Participant 1	Male, 30+	Manager	M1
Participant 2	Female, 30+	Full-time employee	C1
Participant 3	Male, 30+	Full-time employee	C2
Participant 4	Male, 30+	Full-time employee	C3
Participant 5	Female, 30+	Manager	M2
Participant 6	Female, 30+	Manager	M3
Participant 7	Female, 30+	Manager	M4
Participant 8	Female, 30+	Manager	M5

Data Collection

The data collection process began following IRB approval from Walden University (IRB Approval #04-13-20-0237317). To ensure that the perspectives came from a balanced group of participants, I attempted to have a proportional number of managers and non-managers. I employed a purposeful sampling strategy to obtain enough participants. Using this strategy helped identify participants for each group. There were some time gaps in the interview activity while I continued to identify and vet a sufficient number of participants to represent each group for the study. I conducted the interviews using the semi-structured interview protocol. Data collection began in April 2020 and continued through September 2020. The extended data collection period was necessary because of the difficulty in identifying a sufficient number of participants for the study. The data collection process concluded when the data analysis of interviews uncovered no new themes, compelling me to infer the presence of saturation.

I collected all interview recordings using the Zoom software, which allowed the participants to communicate via telephone or internet. The Zoom software had an option to record each interview and maintain the recording in an account that was password protected. I informed each participant when I turned on the recording and when I turned off the recording. I used Temi.com to transcribe the interviews. Temi is an online speech-to-text transcription software. Because of the diversity in speech patterns among the study participants, the initial transcription produced by the Temi software had several portions that were not decipherable. As a means of addressing that issue, I did a

secondary review of each interview transcript. The completed interview transcriptions are maintained on a password-protected computer. Because both of the interview protocols contained a specific set of questions, there were no unusual circumstances in the interviews. I posed each question listed in the interview protocol objectively. Due to the interview protocol's semi-structured nature, some participants asked for clarification of some questions. On occasion, I asked some of the participants for additional detail or further clarification of their responses.

Data Analysis

Data analysis is an essential aspect of the research process that requires diligence and clarity in reporting. The purpose of the study influenced the data analysis technique I adopted. Because my study was a qualitative study using an interview protocol, I asked participants to confirm their understanding of the interview questions. I conducted a qualitative study to explore how knowledge retention strategies contribute to the prevention of knowledge loss in PBOs. In this qualitative study, eight participants (managers and non-managers) answered 12 semi-structured interview questions (see Appendix B).

I gathered data using semi-structured open-ended questions during interviews via Zoom. Once the audio-recorded interviews were complete, I transcribed them using a web-based audio-to-text transcription software. I reviewed the transcription several times to confirm that they were accurate. I used NVivo software to analyze the data. The data collected from the interviews contained the in-depth experiences of the study's eight

participants. The data I collected from the interview questions provided detailed information for an in-depth contextual understanding of managers and consultants' experiences in PBOs as they relate to knowledge loss and strategies to retain knowledge.

In qualitative studies, coding drives the process of the data collection, causing the researcher to restructure the instruments and the perspectives for continuing studies. Reshaping of the analysis took place during this case study, leading to themes that emerged from interviewing managers and consultants who work in PBOs. I employed two cycles of coding in the data analysis. I used descriptive coding to describe the participants' responses and pattern and focused coding to gather the codes into categories and distill them into the most meaningful themes. I repeated the coding cycles twice to ensure that I did not miss any vital themes and no new themes emerged in the data analysis process (Yin, 2014).

I started interpreting the meaning of the data based on the emergent themes and patterns (Yin, 2014). The research question was used for better understanding of the themes and patterns supported by the research findings. This data analysis approach was appropriate for qualitative research studies (Lyons & Coyle, 2016). The data analysis process was useful in uncovering the themes that answered the semi-structured research questions. Additionally, the data analysis process provided a framework to understand how knowledge retention strategies help prevent knowledge loss in PBOs. In analyzing the data, three themes and 19 codes emerged; they are outlined in Table 2.

Table 2

Themes and Codes

Themes	Codes
Knowledge retention benefits	Increased organizational knowledge Mitigate past mistakes through lessons learned Close operational gaps Increased organizational learning Operational efficiency
Knowledge retention challenges	Lack of confidence from customers Knowledge gaps Knowledge hoarding Organizational immaturity Organizational misalignment Poor leadership and management Poor employee morale Poor organizational culture
Knowledge retention strategies	Communities of practice Documentation Cross-training Job shadowing Succession planning Leveraging older workers

The concepts of the KBV of the firm and IC provided a foundation for the study design to explore knowledge retention strategies that help in the prevention of knowledge loss in PBOs. Each of the concepts stresses the importance of knowledge as a strategic resource that organizations use to create value and establish a competitive advantage (Allameh, 2018; Jayasingam et al., 2016). The participants agreed that knowledge

retention is important to their respective teams and organizations, and a lack of a knowledge retention strategy influences their day-to-day business processes and projects.

Evidence of Trustworthiness

Credibility

Lemon and Hayes (2020) argued that credibility replaces internal validity. Credibility is established when the researcher has developed and articulated a certain level of confidence in the findings based on the phenomenon under investigation. To achieve credibility, I ensured adherence to the qualitative methods and instruments for this research study. Combining the proper tools (the interview protocol and member checking) and approaches utilized in case study enhanced the trustworthiness of my research (Frels & Onwuegbuzie, 2013).

Researchers use member checking to ensure that their interpretation of the event is consistent with the participants' interpretation and lived experiences (Langtree et al., 2019). I conducted member checking by giving the participants the opportunity to review their transcribed interviews. They had an opportunity to send me a response if they had any difference of opinion about what their interview said from the transcription they received. None of the participants sent back corrections or updates to their transcribed interviews. Sending transcripts to those who participated in the research study for review provided the participants an opportunity to share any concerns about my interpretations of what they shared during the interview. Agreement with the interview transcript

through member checking and a confirmation of the absence of bias in my reporting were sufficient to render my study credible.

Transferability

Transferability suggests that the findings from one research study can be applied to other settings or groups of people. Daniel (2019) mentioned that transferability ensures that the content of the interviews, the behaviors, and the observed events are typical of the participants' lives. It also requires a detailed description of the context of the study, sample characteristics, participants' demographic information, participants' experiences, and the methods used to recruit the sample. The research study used a total of 8 research participants as opposed to the 24 previously intended. The 8 participants made a diverse group. Table 1 outlines the demographics of the participants. In addition to the variation in participants, detailed observational notes served as a vehicle to gather human behavioral responses to the research questions. Despite holding interviews via Zoom, observational notes collected behavioral responses that audio recordings did not easily capture. The method for ensuring transferability, called the thick description, is a valid method to enhance the probability of transferability (Serra, 2016).

Dependability

Morse (2015) explained that dependability is the ability to obtain the same results if the study were to be repeated. Dependability is evaluated by considering the decisions made and steps taken during the research process (Langtree et al., 2019). To establish dependability for this research study, I developed an audit trail on the data for this

research, including participant communication, how the collection activity occurred, when the participants provided the data, and the tools I used to clean the data and then analyze the data. Audit trails provide a method for increased dependability and trustworthiness of qualitative data findings (Sinkovics & Alfoldi, 2012).

In addition to the audit trail for data collection, the data analysis steps were clearly outlined with the first pass of the data analysis to find descriptive coding nodes. There was a second coding cycle to identify additional themes that emerged after reviewing the descriptive coding nodes. In a few cases, I did an additional coding cycle to clarify where information related to the second cycle's themes might emerge.

Confirmability

Confirmability is equated with the objectivity of the phenomenon under investigation and addresses whether the interpretations and findings are from the participants' lived experiences and do not include the researcher's biases (Lemon & Hayes, 2020). The primary element of confirmability I used for this study was the concept of reflexivity in qualitative research. All of the interviews were transcribed and sent to the participants for review and validation. None of the participants had any concerns or issues with their respective transcripts and validated their responses to the interview questions.

My experience as a full-time employee who worked in a PBO provided me with a significant component of reflexivity. This component included the researcher-researched relationship and the researcher's worldview (Berger, 2015). Having worked on a project

within a PBO, I had professional experience with events that occurred when management did not have a knowledge retention strategy to implement on the project, and project knowledge was lost.

Study Results

The results of this research study could help clarify understanding of how knowledge retention strategies help to prevent knowledge loss in PBOs. My study addressed the research question and the various knowledge retention strategies used by managers in PBOs to prevent knowledge loss. After reviewing the data collected from interviews, observation notes, and member-checked forms, three themes emerged with respect to the research question (Table 2). The research question is as follows: What knowledge retention strategies do managers use to prevent knowledge loss? The participants and supporting documents provided rich data on the knowledge retention strategies used to prevent knowledge loss. Identifying the perception and benefits of knowledge retention and the strategies used by managers formed the major aspect of the study. The following subsections describe the participant's sample, the five themes that emerged, and how the data collected supported the central research question, aligned with existing research, and validated the choices of the two concepts that formed the conceptual framework for this study.

Theme 1: Knowledge Retention Benefits

The first theme makes clear the participants' perceptions of knowledge retention. Research findings suggest knowledge retention is beneficial to managers and their teams.

Most of the research participants affirmed that knowledge retention is important to maintain business and operational efficiency, improve process delivery, and close operational gaps. Participant M1 mentioned that knowledge retention is significant because it helps him make sure his team members can utilize all of the knowledge available to complete their tasks quicker. Participant M3 stated that knowledge retention is critical as it relates to performing operations efficiently and effectively. Participant C1 commented, "Knowledge retention helps people get up to speed quicker." This theme that emerged from the data helped form one of the significant aspects of the study. The research data indicates that knowledge retention is critical for managers to keep continuity. Additional supporting statements from the participants are shown in Table 3.

Table 3

Theme 1: Knowledge Retention Benefits

Participant	Participant comments
C1	It would instantly allow people to get up to speed quicker. Then potentially falling through may be old manuals because nobody puts anything in manuals anymore. It would let people get up to speed quickly and hit the ground running after somebody leaves, be able to transfer that knowledge to new people who may have never come in contact with a person, and it just gives, I would imagine, that it would give the organization a sense of security they will not lose, you know, potentially the type of knowledge that isn't, you know standard, you know, because there's always standards of doing everything, but then ways things are done just by doing them every day different ways that people come up to, I don't want to say cut corners which is a different methodology outside of you know,

	the standard textbook way of doing things, you know, that people, you know gained through doing the actual work, you know.
M1	That's very highly important to me as a manager because I need to know that my team members that I have can consistently follow whatever the knowledge they have, whether it's from the job or from something else, that it can flow through the procedures that they have and they can utilize that knowledge to, you know, complete their tasks easier.
M2	I think the biggest benefit is that it reduces dependency on a single person. The—which tends not to be the healthiest team atmosphere to have more ideas and more knowledge, but also if something happens to that person or they leave, it's bad for the project, increases overall efficiency and effectiveness and to it even when it's not related to people leaving the firm or something like that, knowledge transfer helps promote healthy growth, and transfer of responsibilities are separate areas within the firms of people able to move up and take on more responsibility in a cyclical fashion.
M3	I feel like knowledge retention is very important, especially as it relates to a specific topic or operational function that a specific team performs.
M4	The benefit of knowledge retention would be to prevent making the consistent missteps and, and overall mismanagement of funds. Many times individuals are learning critical lessons that can improve process delivery. As you're thinking about not just process, but product delivery as well, and as you're thinking about reproduction of effort, it costs the company more and more money just to correct past issues as opposed to being able to just mitigate it in the future. You know, just taking the information that you've learned, understanding what your mistakes have been and don't repeat them in the future.

Theme 2: Knowledge Retention Challenges

The second theme makes clear the challenges participants have with knowledge retention in their organization. Most of the research participants spoke freely about the challenges their organizations have when knowledge retention is not a priority. Some of the challenges the participants discussed were team members hoarding knowledge and organizational leadership not encouraging knowledge retention. Participant C1 talked about experiences meeting older workers who did not want to share their knowledge with younger workers. Participant M2 explained that a lack of a knowledge retention strategy could cause inefficiency. Participant M3 shared an experience of managers being "territorial" with their knowledge. The research data indicates that when there are challenges to retain knowledge, loss of knowledge and other factors that impact the competitive advantage of an organization will occur. Additional supporting statements from the participants are listed in Table 4.

Table 4

Theme 2: Knowledge Retention Challenges

Participant	Participant comments
C1	I will not say many, but yes, I have come across people, and it's terrible to say it's usually older people tend to want to hold on to it. I don't know if they feel as the workforce gets younger that the younger crowd is coming in to take their place at least before they retire, and they don't want

	their job, their livelihood put at risk, so they hold on to that knowledge just a little bit tighter because it secures their position within the company or the agency.
C2	In my current organization there is definitely a lack of knowledge retention. I think the main driver for businesses for the last 10 years has been financial cuts, reducing expenses.
M2	If you don't have knowledge retention, they (customers, clients) will get annoyed. They may lack the confidence in you as a consultant and it will lead to inefficiency too, in addition to just their perception about it, it will result in less positive experiences with you.
M3	I think knowledge retention is very important. I think that organizations, especially immature organizations or people that are very matrix and they make decisions from high levels, they tend not to fully investigate how the implications of making decisions like reorgs, right. Perhaps they don't fully understand the implications of letting John go, who is three levels down when Johnny is the only person that's really been performing a certain function for the last five years and nobody else knows how to do it. He hasn't documented that anywhere. So, I think overall high level, the important thing to do, and I realize, I mean, I think one of the resistance factors to this is people are afraid to share information because they're insecure.
M4	So, I can tell you that I learned from a hard lesson learned. I was, as I first joined my current organization, there was an employee that had been there for 27 years, and so just imagine the knowledge loss when an individual walked out the door abruptly, no two weeks' notice, no nothing. So, when I heard that he was leaving, I kept bringing it to the attention of upper management, asking that they you know, would work with us to try to get that knowledge transfer documented and some type of evidence of proof, right? Like we needed to get from him and it was shrugged off. Like it wasn't a big deal. We're better off without him. You know, we don't really need them, you know, and I was actually taken aback from that.

Theme 3: Knowledge Retention Strategies

The third theme makes clear the participants' understanding of different knowledge retention strategies they use. The participants described the importance of using documentation, developing a community of practice, job shadowing, and cross training as strategies to retain knowledge on their teams and organizations to ensure continuity and avoid knowledge gaps. Participant M1 emphasized how documentation removes the many challenges of knowledge sharing within an organization. Participant C1 described a situation where she documented her existing knowledge to help a new team member get up to speed on the current business and operational processes. The research data indicates that different strategies are implemented by managers to retain knowledge on projects, teams, and organizations. Additional supporting statements from the participants are shown in Table 5.

Table 5

Theme 3: Knowledge Retention Strategies

Participant	Participant comments
C1	You know that the last person that joined our team was probably maybe two years ago, and some of the things that I did beforehand was put together an email that pretty much laid out everything that he would need access to, you know, to start working immediately, which encompasses I do anyone cured earnest and

	getting people's account setup and things like that. So, he had an email that outlined that for him.
M1	So, a couple of things right number one is documentation. Everybody needs to document. Not only what they do on a monthly basis, but they need to be able to train another team member to be able to do that so that way that continuity stays there. So that's super important to me. I've always taken pride in having cross-training and that's one thing that we never had. You know where I'm at right now is that we always had to you know, everybody was siloed. I should say everybody was doing one thing, and the other hand didn't know what that person was doing. So it was important to have cross-training so that way should somebody leave or not show up. They get sick whatever it is and can't come back at least. Somebody knows something about the process.
M2	So for the more explicit knowledge formally documenting roles and responsibilities and providing historical project documentation, for context, kind of two different outputs there, and then to help gain that more tacit knowledge I think informal Q and A's between ideally the person transitioning out and transitioning in where they can kind of debrief and say, what are we doing and why, getting feedback and the most important thing. So, one I've used in the past that was actually pretty nifty, we had created a webinar for a project for the client to share with their employees. I was able to share the webinar with the person coming on. It explained the entire project. It's not something we would normally create, but we do have Zoom recording capability. I think we could. So, there was that and then documentation review, of course I've mentioned in addition to the informal Q & A, I think just the act of observing someone else, attending a meeting where my only job is if I'm the person coming on, it's just to pay

	attention and see what questions come up in that interactive, actual environment compared to just reading documents or hearing about it.
M3	So, the strategy I use is to document knowledge. So, when we have something that somebody knows and that somebody else may not know, I always say, make a SharePoint, do a PowerPoint. Let's save it to a collective area where we can all access that information. Right, it's very important in, in my field to preserve that information, because if you don't have it, you're not going to operationalize correctly.
M4	And then you have those not, not so formal conversations where people just say, well, you know, this is what happened before. So, a lot of times a lot of conversations start, well, historically this, you know, we've seen this with this case in this customer. So, it's a lot of conversation, but it may not always be formally documented, but I have tried to start to impose that formal documentation of those things so that we can make sure that we're capturing lessons learned, which is something our organization moves way too fast to even go back and do like, or post-mortem 30-, 60-, 90-day lessons learned.
M5	The main thing that I've tried to do is when I have someone that's doing a particular role that I try and make sure that they document what it is that they do. And so, by them documenting it because they're actually doing the job. And then we go through that process of understanding exactly what that job entails, whether it looks the same as I intended it, or it's evolved over time that I try and make sure that I look at that as something that I can have in bed, if they were to leave that they can lead that information with us.

Summary

The research question I answered in the presentation of findings for this research study was, What knowledge retention strategies do managers use to prevent knowledge loss? The study's findings revealed that there are different knowledge retention strategies that managers use in day-to-day operations. Additionally, the study's findings revealed the benefits and challenges of knowledge retention to managers and organizations. Chapter 5 includes the interpretation of the findings, limitations of the qualitative research study, recommendations, implications for positive social change, and conclusion.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this case study was to explore knowledge retention strategies to prevent knowledge loss in PBOs. This study included semi-structured interviews of eight experienced managers and consultants. This chapter presents a detailed explanation of the findings and limitations of the study. Additionally, this chapter addresses recommendations for professional practice as well as future studies, implications for social change, and the conclusion of the study.

Interpretation of Findings

Knowledge retention has remained an essential strategy in preventing knowledge loss and ensuring project and business continuity. The interview responses indicated that knowledge retention is an excellent way of ensuring that organizations have continuity in key team roles without knowledge loss. The participants agreed with Ensslin et al.'s (2020) assertion that knowledge retention helps formalize an organization's commitment to its long-term strategic objectives. Makhubela and Ngoepe (2018) similarly stated that knowledge retention is a solution to combating knowledge loss by accumulating, maintaining, and identifying knowledge lost by the organization. Retaining that knowledge can help the organization maintain a competitive advantage.

All participants in this research study suggested that a knowledge retention strategy helps managers maintain business continuity and efficiency. Chigada and Ngulube (2016) stressed that managers face a challenging task to preserve organizational knowledge, which entails designing and implementing a knowledge retention strategy.

Managers should implement a knowledge retention strategy proactively in anticipation of when an employee will leave unexpectedly or take early retirement. Makhubela and Ngoepe (2018) argued that a knowledge retention strategy helps improve innovation, organizational growth, employee development, and business efficiency. Levy (2011) explained that a knowledge retention strategy helps control business losses and avoid starting over within organizations.

Acharya and Mishra (2017) viewed a knowledge retention strategy as a solution to help managers reuse or reapply essential knowledge in the future to propose innovative solutions to newer problems and even train other employees on project engagements with important clients. Motshegwa (2017) added that implementing a knowledge retention strategy requires that organizations be aware of factors that can enhance or impede knowledge retention. The study's findings indicated that managers see benefits from knowledge retention and the importance of a knowledge retention strategy to maintain business continuity and efficiency.

The findings also indicated challenges with knowledge retention. First, some managers and organizations did not emphasize knowledge retention. Although there is an emphasis on knowledge retention, managers tend to have little interest in this issue, and few organizations have a formal, well-functioning knowledge retention strategy in place (Wikström et al., 2018). Second, some of the older employees tended to hold on to their knowledge and not share with team members. Some of the participants commented on experiences with team members who declined to share their knowledge, such as

Participant M3, who described the behavior of some employees who would not share knowledge as territorial. Anand et al. (2020) added that while organizations put a lot of effort into cultivating knowledge-sharing activities among employees, the bottom line is that the success of these efforts relies on the employees' willingness to share their knowledge. Some participants reassured employees who were hoarding knowledge that they were not a threat and convinced them to share their knowledge with the team.

Another challenge to knowledge retention is employee turnover. All participants in this research study confirmed that employee turnover, whether voluntary or involuntary, does have an effect on knowledge retention. Kanade et al. (2015) asserted that employee turnover costs organizations thousands of dollars annually. Martins and Meyer (2012) commented that employee turnover leaves huge gaps in valuable knowledge that are difficult to identify until unexpected quality problems, mistakes, costly disruptions in performance or operations, loss of competitive advantage, and even tragic accidents occur. Johansen (2013) commented that employee turnover requires the organization to invest significant resources to recruit, interview, train, and socialize new workers.

The findings from this study affirmed that there are different knowledge retention strategies managers and employees use to prevent knowledge loss. The participants discussed using different strategies, such as a) communities of practice, b) documentation, c) cross-training, d) job shadowing, and e) succession planning. Patriotta et al. (2013) argued that the transfer and sharing of knowledge and best practices with the

rest of the organization increases the organization's ability to exploit its knowledge base and improve performance.

Only one of the eight participants talked about developing a community of practice to share and retain knowledge. Communities of practice are beneficial to driving strategy in organizations (Manuti et al., 2017). Bratianu (2019) stated that communities of practice stimulate knowledge sharing. A key advantage for communities of practice is the environment of trust created that reduces the effects of knowledge hoarding.

Documentation was a knowledge retention strategy affirmed by most of the research participants. Levallet and Chan (2019) asserted that knowledge retention increases when documented knowledge is available for other employees to use. New team members use documented tacit knowledge to understand existing processes and reduce the risk of knowledge loss.

The findings from this study confirmed the use of succession planning as a knowledge retention strategy. Participant M2 discussed using a succession plan when she transferred to another project. Chigada and Ngulube (2016) asserted that succession plans are an orderly knowledge retention strategy for business and project survival. Sabir and Kalyar (2013) added that taking policy initiatives that would promote organizational learning through enhanced business practices such as succession planning could result in bridging the knowledge gap and increasing competitive advantage, employee retention, and job satisfaction.

Limitations of the Study

There were a couple of limitations presented in this study. The first limitation for this study was the potential for researcher bias arising from my personal views on knowledge loss and knowledge retention and its impact on PBOs. My knowledge of the phenomenon and the social setting presented a potential bias. To prevent this bias, I avoided asking leading questions or preempting the participants' answers. Additionally, I utilized bracketing, as recommended by Onwuegbuzie and Byers (2014), to reduce personal bias.

Another limitation of this study was the actual sample size. The intended sample size was 24 participants. I initially used purposeful sampling and social media posts directed at professional organizations to recruit participants. However, I was only able to receive responses from eight participants. The number of responses can be viewed as low and potentially limited the study from having more diverse viewpoints.

Recommendations

The first recommendation for future research is to extend the study to include project executives and directors who work in PBOs. The participants in this study were a combination of managers, full-time employees, and consultants. Ensslin et al. (2020) stated that executives have a hard time understanding how well their processes and procedures promote knowledge retention. Extending the study to include project executives might provide an additional perspective on knowledge retention and strategies to mitigate knowledge loss.

The second recommendation for future research is to examine more in-depth other knowledge retention strategies such as mentoring. Chigada and Ngulube (2016) identified mentoring as a knowledge retention strategy where senior managers transfer their knowledge to less experienced colleagues in a short period. Wheeler and Cooper (2016) viewed mentoring as a strategy to support knowledge retention, succession planning, and job satisfaction. Ross (2013) stated that an excellent mentoring program focuses on organizational purpose and is streamlined to meet the organizational goals. More research into mentoring and other knowledge retention strategies not identified in this research study is needed.

The third recommendation for future research is to study how an organization's culture affects knowledge retention. Organizational culture is essential to knowledge retention (Jayawickrama et al., 2019). Sitlington and Marshall (2011) asserted that organizations should consider their culture and climate regarding the mechanisms for knowledge retention. Some of the research participants noted that knowledge retention was not a focal point within their organization. More research is needed to understand how an organization's culture influences knowledge retention. Ma et al. (2014) concluded that a trusting culture improves knowledge retention, and its leaders and managers should try to create such a culture.

The fourth recommendation for future research is to study the relationship between leadership and knowledge retention. The role of leadership is to promote a positive cultural direction towards knowledge retention (Yang et al., 2014). Previous

research studies looked at the relationship between transformational leadership and knowledge sharing (Anselmann & Mulder, 2020; Pellegrini et al., 2020). Further research into the relationship of other leadership types (transactional, servant, charismatic, and coaching) and knowledge retention is warranted.

The fifth recommendation for future research is to study the effect of knowledge hoarding and its impact on knowledge retention strategy. Anand et al. (2020) stated that, despite investing in knowledge sharing facilitation, knowledge hoarding remains prevalent in organizations. When employees withhold information from each other, it has a long-term negative impact on trusting each other (Holten et al., 2016). Several of the research participants shared examples where they encountered another team member who hoarded their knowledge and how they gained the team member's trust in order for them to share their knowledge. De Geofroy and Evans (2017) agreed that increased trust among employees is important to reduce knowledge hoarding. Organizations can help to limit knowledge hoarding by encouraging teamwork and collaboration.

Implications

Contribution to Individuals

The significance to the employees of PBOs is that establishing a knowledge retention strategy has the distinct advantage of improving efficiency and organizational growth, enhancing employee development and competitive advantage. The participants revealed that knowledge retention closes operational gaps, keeps continuity, and is critical to an organization's success. Gaghman (2019) noted that employees are more

willing to contribute to knowledge sharing in a positive workplace environment. An employee's positive attitude can highly influence their contribution to knowledge transfer, sharing, and retaining practices.

Contribution to Business Practice

The turnover rate of skilled workers has increased throughout history. From the 1960s to the 2000s, the turnover rate ranged from 15% to 28% (Lo, 2015). Lee et al. (2018) argued that turnover is detrimental to organizations in terms of higher costs for recruitment and training, loss of organizational memory, and decreasing productivity. Kim et al. (2013) stated that the shortage of skilled workers would increase as the global workforce gets older and fewer younger workers are available to meet the labor demand. The trademark of a successful organization depends on the degree to which it generates, maintains, and protects knowledge.

Sumbal et al. (2018) noted that when there is loss of critical skilled workers there is a risk of knowledge loss, which could be the foundation for the competitive advantage of an organization. Therefore, it is critical to identify the important knowledge possessed by departing employees and reacting applicably to retain that knowledge. The findings from this study on exploring knowledge retention strategies to prevent knowledge loss showed that formal knowledge retention strategies need to be developed and supported by managers throughout the organization. Project-based organizations should have a knowledge retention strategy to retain organizational knowledge and mitigate the risk of knowledge loss. Ramona and Alexandra (2019) affirmed that even though the process of

retaining knowledge in organizations is considered crucial for long-term business success and maintaining a competitive edge, only a few organizations have clear and formal knowledge retention strategies.

The implication for positive social change includes the potential to impact project teams across different industries by contributing to the enhancement of knowledge retention strategies. The continuing sharing of knowledge among teammates would add to the organization's knowledge repository and lessen knowledge gaps while ensuring business continuity. The findings from the qualitative study participant interviews revealed that knowledge sharing and knowledge transfer practices are crucial to employee development and job performance. Ahmad and Karim (2019) suggested that knowledge retention has a positive effect on employee performance, increased innovation in the work place, and an improved team climate. Organizations, including PBOs, could use the qualitative study results to develop and formalize existing knowledge retention strategies and increase their adequacy.

Contributions to Society

An organization's formal knowledge retention strategy is important for long-term success. The overall strategy needs to have knowledge sharing and knowledge transfer strategies that can address any knowledge gaps that may occur. Managers need to create an environment where knowledge sharing is encouraged. The qualitative study participants confirmed that knowledge retention strategies are critical to training and continuing employee development within the team and organization. These strategies

should strive to develop individuals with the necessary technical and business knowledge for when employee turnover happens. Moreover, retaining critical knowledge also prevents organizations from starting from scratch every time a project gets underway. In some cases, these projects create products that benefit society.

Contribution to Theory

The study findings revealed that there are not enough formal knowledge retention strategies in PBOs to prevent knowledge loss. The qualitative approach adopted for this research study provided a solid basis for initial data collection that would inform further research on the relationship between knowledge retention and knowledge loss. According to Mayan (2016), qualitative researchers work inductively from individual cases and a preexisting framework or a particular theory.

The findings from the qualitative study filled a gap in the literature by providing knowledge about knowledge retention strategies to prevent knowledge loss in PBOs. Additionally, the qualitative study findings provided insights regarding how documentation, collaboration, role shadowing, and cross training are some of the knowledge retention strategies that are used by managers to help mitigate knowledge loss.

I recommend developing a knowledge retention strategy that includes the following steps: (1) identification of critical knowledge, (2) assessing the risk of losing the critical knowledge identified, and (3) actions to preserve the critical knowledge. I also recommend managers work with their team to develop knowledge sharing practices such

as cross-training and informal training sessions. These practices will help to transform individual knowledge into organizational knowledge. Additionally, I recommend providing incentives for staff who actively participate in sharing their knowledge with the team. Employees should feel the value of sharing their ideas and knowledge with their teammates and understand that their input is important to the overall performance of the team.

Conclusions

The emergent themes reveal how knowledge retention strategies supplemented by knowledge sharing and knowledge transfer practices in PBOs might contribute to preventing knowledge loss. Feedback from the research participants provided valued information on how knowledge retention strategies can help to prevent knowledge loss within their organization. It was noted by the participants that knowledge retention prevents knowledge loss by implementing knowledge sharing and knowledge transfer practices to reduce employee turnover.

Organizations face increasing worldwide competition due to globalization. This reality makes them aware of the need to see the knowledge and expertise of their employees as a critical asset (Ramona & Alexandra, 2019). Implementing effective knowledge retention strategies would have a lasting effect on the employees, business success, and culture and benefit both the organization and society. Managers have an important role in supporting the implementation of knowledge retention strategies. Daghfous et al. (2013) noted that managers should act as role models for employees and

be proactive in their support. Similarly, Liu et al. (2020) asserted that managers should maintain high spirits and a joyful atmosphere in the workplace to motivate people to share knowledge.

The results contribute to the existing body of knowledge regarding how organizations use knowledge retention strategies for business continuity. An organization's failure to incorporate knowledge sharing practices such as cross-training and documentation could result in knowledge loss and create knowledge gaps. Effective knowledge retention strategies may mitigate knowledge loss and increase decision-making by ensuring that knowledge is readily available to employees. By highlighting the importance of knowledge retention, this research study raised the awareness of the importance of employees and the value their knowledge brings to their respective organizations.

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Appendix A: Interview Questions – Managers

Participant ID Code: _____ Interviewer: Robert Haughton

Title/Role: _____

Date: _____ Time: _____

1. What is your perception of knowledge retention and its importance to your project team and/or organization?

2. What benefit do you think knowledge retention brings to your overall project and/or organization?

3. As a manager, what knowledge retention strategies do you have in place to keep your team on track when there is turnover on your team?

4. Explain your process of replacing or substituting the lost expertise or knowledge?

5. Can you describe the formal and informal methods used to transfer/share knowledge? Examples of formal methods are mentorship programs or cross-training classes. Informal methods are knowledge sharing or social networks.

6. What are some of the challenges you face in using the methods you just mentioned to promote knowledge retention?

7. How have you managed such challenges or obstacles?

Personal experience

8. Please tell me an example when you successfully shared some of your knowledge about your project with another project manager or team lead?

9. Can you give me a recent example where you successfully used some information that you collected from another employee in your organization?

10. What type of method(s) do you use to obtain information from other managers or employees in the project/organization? In your opinion, which method(s) are the most useful?

11. Have there been situations when you felt that what you know (your knowledge) will be lost when you leave the project and/or the organization? If so, can you describe these situations?

12. Are there any other important issues concerning knowledge transfer/sharing method(s) with project team members that we have not discussed?

Appendix B: Interview Questions – Non-managers

Participant ID Code: _____ Interviewer: Robert Haughton

Title/Role: _____

Date: _____ Time: _____

1. What is your perception of knowledge retention and its importance to your project team and organization?

2. What benefit do you think knowledge retention brings to your project/team? To your organization?

3. What is your perception of how your manager handles team turnover as it relates to knowledge retention?

4. Please tell me an example when you successfully shared some of your knowledge about the project with a new project team member?

5. Think about a recent task where you needed to obtain some information from other employees in the project/organization. How did you go about it?

6. Can you give me a recent example where you successfully used some information that you collected from another team member on your project/organization?

7. How important is the knowledge you have received from other team members?

8. What types of method(s) do you use to obtain information from other employees in the organization? In your opinion, which method(s) are the most useful?

9. Can you give an example of a time when you obtained some information from other team members in the organization using formal method(s), such as a training program?

10. Can you give an example of a time when you obtained some knowledge using informal method(s), such as social networks or knowledge sharing?

11. Are there any other important issues concerning knowledge transfer/sharing method(s) with other team members that we have not discussed?

Appendix C: Email Invitation to Potential Participants

Hello,

My name is Robert Haughton, a Government Health Care consultant and a doctoral student at Walden University. I am sending this message to invite you to take part in a research study of exploring the knowledge retention strategies to help prevent knowledge loss in project-based organizations. The purpose of this study is to explore the knowledge retention strategies that help to prevent knowledge loss in project-based organizations (PBOs). I am specifically interested in the different methods managers use to retain knowledge to keep project productivity going. I am seeking individuals who fit the selection criteria below to take part in a 15-to-30-minute interview.

To be eligible for this study, you must be either:

- A manager (i.e., project coordinators, project team leaders, project managers, project directors, and senior project managers) with a minimum of 3–5 years of project management experience.
- Full-time employee (non-management) with 2–5 years of experience working on project teams
- A consultant or contractor with 2–5 years of experience working on project teams.

All participants and their organizations will remain confidential throughout this research study. To maintain the privacy of the interviews, the interview settings for the managers, employees, and consultants will occur through Skype or Zoom to allow participants to speak about their experiences handling knowledge loss and methods to retain knowledge.

If you would like to participate in this study and meet the above criteria, please email me, and I will send you the informed consent form to review and sign, along with a copy of the interview questions to review in advance.

I thank you for your consideration and your contribution towards improvement of knowledge retention strategies to prevent knowledge loss in PBOs.

Best regards,

Robert Haughton