HOW ORGANIZATIONS USE COLLABORATION TO CREATE KNOWLEDGE

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Dedication

This dissertation is lovingly dedicated to my lovely and caring Mother, Mrs. Florence Ezell and my strong and magnanimous Father, Mr. Dennis Ezell Jr. Their support, encouragement, and constant love have sustained me throughout my life. Additionally, I want to recognize Pretty (my cat) for collaborating (her contribution consisted of inspecting and resting comfortably on various drafts and printouts) and keeping me company during my doctoral program.
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ABSTRACT

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This research study examined how organizations use collaboration to create knowledge. Organizations around the world are moving from being primarily manufacturing based to more knowledge-based entities. Knowledge can provide a unique competitive advantage in a very crowded landscape as organizations compete for the best ways to guide their organizations. Given these current trends it is opportune to examine how organizations develop knowledge. Recently many organizations have come to believe that collaborative practices help to create knowledge. This dissertation research examined this link to see if collaboration helps to create knowledge in organizations.

In order to examine this connection the research question that guided this study was: “How does an organization use collaboration to create knowledge?” The study used an exploratory qualitative interview design since the literature has not yet examined this connection in-depth. A convenience sample of 21 participants were interviewed from different industries. The in-depth interviews were then coded and a thematic analysis approach was used to develop themes.
The research concluded that collaboration and knowledge creation in organizations appear to be largely informal, self-directed, and self-motivated. Surprisingly senior management does not appear to value or measure collaboration. If participants need support, they reach out to others in their trusted network to help them solve problems. Organizations are able to create knowledge, but it seems to occur only if there is individual and mutual gain from the collaboration.

Preexisting team cohesion or mutually identified interests in the collaboration outcomes drove collaboration in an unsupported environment. Very little evidence was found that the participants’ behaviors promoted long-term knowledge discoveries that could be more broadly transferred to others within the organization. This research study opens up possible future research studies that may include a larger stratified study and research to explore technology and its impact on collaboration and knowledge creation.

Keywords: create, knowledge, organization, competitive
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Chapter 1

This dissertation will examine how people use collaboration to create knowledge in their organizations. Particular attention will be paid to how participants in organizations view collaboration, knowledge creation, barriers to collaboration, and the relationship of collaboration to knowledge creation.

Dissertation Research Background

Organizations around the world are moving from being primarily manufacturing based to being knowledge-based entities (Drummond, 1999). Knowledge can impact organizations internal and external functions (Davenport, DeLong, & Beers, 1998). From an internal perspective, firms that understand how to create a knowledge-friendly culture will empower their employees to collaborate and better utilize knowledge within their organizations to increase the firm’s competitiveness (Davenport, DeLong, & Beers, 1998). Externally, knowledge can provide organizations with a unique competitive advantage in a very crowded landscape as they compete for the best employees at all levels (Davenport et al., 1998) and develop innovative ideas, creativity, better execution, etc.

Organizations seek a return on their investment in knowledge resources, and they hope that this investment will pay off in the short and long term for the organization. People within organizations use knowledge in a variety of ways: to collaborate, solve problems, and aid in their decision-making. Understanding how organizations use knowledge and create knowledge can help the organization select the best processes and tools to compete in the marketplace, improve their human capital, and aid in effective decision-making.
Justification For the Research

As technological increases have made communication and management of knowledge easier, one aspect of these developments that has not been given a great deal of attention is understanding how organizations use collaboration to create knowledge. Technology has impacted how people communicate in organizations and how knowledge is transferred and used. Yet, although organizations are quick to recognize changes in technology they are often slow to realize that people have developed different ways to communicate and work together within the organization (Secretariat, 2010). Researchers could help organizations by developing more empirical research on knowledge (and related topics such as knowledge transfer) (Mitton, Adair, McKenzie, Patten, & Perry, 2007). This would help practitioners develop evidence-based strategies when they implement knowledge-based initiatives within their organizations (Mitton et al., 2007).

Developing a better understanding of how organizations collaborate and create knowledge has been an interest of mine throughout my career as a consultant and employee of fortune 500 companies. I have often been asked to develop new processes to solve problems that are rooted in collaboration or knowledge creation issues. I learned that a new approach was needed to address the issues. I worked for a higher education institution and I was often developing new processes and procedures that were not efficient. Rather than trying to change the entire culture, I tried to change a small area. By understanding and making small changes in the culture and improving collaboration between team members, there was an increase in new ideas and ownership of the functions and work product. This experience helped me to better understand collaboration and to link collaboration to knowledge creation.
Research Question

The research question that this study seeks to answer is: “How does an organization use collaboration to create knowledge?” In my experience as a consultant and in working in major corporations, I have found that companies, divisions or units, and work teams do not always agree on how to collaborate and how to create knowledge in order to move the organization forward. People often work in silos and have different collaborative approaches, and they often have different ideas about how to utilize resources that will stimulate the development of knowledge and solve problems. In some cases, organizations do not use resources effectively. For example, the literature on knowledge management often focuses on how knowledge is used within organizations, but very little empirical research has been done to determine how people actually use knowledge to aid the organization (Heisig, P., 2014 September).

For the purposes of this study, empirical research was examined to better understand how collaboration is used to develop and create knowledge in organizations. Examining this literature helped me to develop a deeper understanding of the behaviors that help people collaborate and create knowledge. Additional research questions that will be addressed include:

- How can senior management support collaboration?
- How is knowledge transferred within an organization?

Reviewing prior research on these issues and my experience in consulting and working in major corporations reinforces my belief that these research questions may be important in helping organizations use collaboration more effectively to create knowledge.
Theoretical Basis

The literature in Chapter 2 provides an overview of the history and theories of prior research on knowledge management, how knowledge has informed various disciplines, and knowledge management theories. The chapter also discusses research that explores the link between collaboration and knowledge creation. Leading collaborative theories on learning and organizational learning, research and knowledge transfer will be explored. To understand how collaboration creates knowledge, you have to understand the history of knowledge in organizations, the types of knowledge, and the underlying collaboration and knowledge theories.

Understanding the history of knowledge and how it has influenced various disciplines is key to understanding the development of knowledge as the economic basis of many organizations have moved from an industrial age to an information age (Rifkin, 2000). The age of access is used to describe how information production, distribution, and access are at the heart of what Rifkin (2000) believes is a new economy. Modern management builds on ground-breaking work that Fredrick Taylor and others developed to better understand the worker’s role in production. Visionaries such as Peter Drucker began to see knowledge as playing a pivotal role in future economies (Drucker, 1999).

Defining terms related to data, information, and knowledge establish a common understanding of these concepts that will provide a way to evaluate how participants and organizations view these concepts.

Although there are studies on collaboration and knowledge no studies examine the link between collaboration and knowledge creation. Knowing the theoretical roots of knowledge transfer and collaborative learning can also provide an understanding of how
these concepts can work successfully in practice. The concepts can also be used to identify deficits or in troubleshooting when they are not working.

**Research Methodology**

This research study will use a qualitative approach to address the research question, “How does an organization use collaboration to create knowledge?” This is an appropriate methodology because research has not previously examined the relationship of collaboration to knowledge creation. I chose qualitative interviews in order to understand participant’s perspective on these complex issues in-depth.

I interviewed 21 participants who were drawn from a variety of demographics (including age and gender), organizational levels, and organization types (finance, not for profit, higher education, etc.). The participants were then screened, selected, and interviewed over three months.

The initial analysis took the broad interview question categories and delved deeper into how the participants felt about certain aspects of collaboration or knowledge creation in their organization and yielded 11 main categories. In the secondary analysis, the participant’s responses were analyzed for key phrase/topics and whittled down from 11 main categories to seven. The data from the interviews were then analyzed using thematic analysis to identify categories and themes in the data. Once the seven main categories were identified, the next step was to further define the participant responses into subcategories that exist within the main categories. The final step was to analyze the main themes and subthemes.
Research Assumptions

This dissertation research makes a number of assumptions. In developing the approach to the research analysis, I assumed that organizations want to use knowledge as a competitive advantage. I also believe that organizations that use knowledge more efficiently are able to be more competitive. Additionally, I assumed that collaboration could drive efficiency and knowledge creation in an organization. Lastly, people, not knowledge management tools, are the main driver of knowledge utilization within organizations.

Researcher Positionality and Role

The positionality of the researcher can be a potential limitation to the success of a research project. An interviewer must remain conscious of their own identity, and acknowledge the ways in which this may shape interactions with participants (Valentine, 1997). As a practitioner, I have often dealt with similar collaboration or knowledge creation issues as the interview participants. I had to make sure that I did not inject my own opinions or lead the participant’s response. This was a particular concern in follow up questions.

One of the distinguishing features of this dissertation research is my role as a researcher/practitioner conducting the study. For the purposes of this research study, a practitioner is defined as a person who is actively engaged in a discipline (Merriam-Webster, 2016). My previous experience as a business process consultant and working in various top corporations has given me a unique insight that has driven me to want to study collaboration and knowledge creation. Having experience as an insider and at
times a decision maker, I feel that this research will be beneficial to expanding collaboration and knowledge creation research and practice.

**Dissertation Overview**

The dissertation is divided into five chapters. The first chapter is the introduction. The literature review in chapter 2 will explore and present prior research on topics encountered in this research study. Chapter 3 will present the research study methods, including an outline of the methodology used to plan, gather, and analyze the research data.

The research results in chapter 4 will build upon the methodology chapter by presenting the research data that was captured from the participants’ interviews. Finally, the research analysis in chapter 5 will analyze the key findings, reiterate the research study limitations, discuss recommendations based on feedback from the practitioners interviewed for the research study, and explore recommendations for future research.

**Conclusion**

Addressing the research question “How does an organization use collaboration to create knowledge?” provides a unique opportunity to conduct a research project that may give organizations better insight into utilizing collaboration to create knowledge. One of the other areas that the dissertation research can address is the lack of research linking collaboration and knowledge creation. Next, an increase in the understanding of knowledge may be used as a competitive advantage in many organizations. Additionally, since a practitioner conducts the research study, it is hoped that it will add insights that will aid organizational practice.
Chapter 2 - Literature Review

Knowledge is often viewed as an object, asset, commodity, and discipline (Schultze & Leidner, 2002). It has been discussed in disciplines such as economics and management science and has spawned a new discipline called knowledge management (Mårtensson, 2000). Knowledge can be seen as a valuable commodity for organizations, and knowledge management can be seen as the tool that focuses and shapes knowledge to spur innovation and develop a competitive advantage (Mårtensson, 2000). According to Schultze and Leidner, “knowledge has become a primary resource in organizations” (Schultze & Leidner, 2002, p. 214).

In today’s business world, powerful forces are reshaping the economic and business landscape, and this has led to a call for a fundamental shift in organizational processes (McKern, 1996). According to Mårtensson, “The prime forces of change include globalization, higher degrees of complexity, new technology, increased competition, changing client demands, and changing economic and political structures” (Mårtensson, 2000, p. 204). This changing view on the business world and the role of knowledge has put a renewed emphasis on work by visionaries such as Fredrick Taylor and Peter Drucker who have helped to further define the changing role of workers in the industrial age and the information age. Understanding how organizations are responding to changing business trends and the changing role that knowledge is playing in worker productivity will have a profound impact on how organizations make decisions to stay innovative and develop a competitive advantage (Mårtensson, 2000).

Research into defining tacit and explicit knowledge provides a basis for understanding how different types of knowledge are used within an organization and the
impact that knowledge management implementation has within organizations. Research into understanding knowledge types also helps in the understanding of how people learn within organizations. In designing knowledge management systems, it is essential to consider the human and social factors at work in the production and use of knowledge (Thomas, Kellogg, & Erickson, 2001).

Understanding the role that collaboration has on knowledge has led to concepts such as collaborative learning and knowledge transfer. Developing an understanding of what is meant by collaborative learning has an impact on how efficient organizations are in creating and transferring knowledge. Because economies are more knowledge driven, being able to understand the theoretical basis for collaborative theories and knowledge transfer may allow organizations to develop a competitive advantage.

**What is Knowledge?**

This chapter will define what is meant by knowledge and collaboration. Specifically it will address the research question “How does an organization use collaboration to create knowledge?” by first defining what is meant by knowledge from a historical perspective and then how its evolution has roots in economics, industrial engineering, and information economics. In addition the chapter will discuss the age of access. This is a term that is used to define the new modern economy that has knowledge at its heart (Rifkin, 2000). The chapter then moves on to focus on modern management and builds on work by industrial engineering and how it embraced knowledge to improve organizational performance. Next I will draw on a personal example to illustrate a situation from my professional experience, which led to a positive material outcome to
create value for the organization. Lastly, I will explore what is meant by collaboration and discuss collaborate capability within organizations.

**Historical Context**

Knowledge is a concept that Plato called “justified true belief” (Plato, 1954/1954, p. 117-124). Philosophers throughout history have debated this definition of knowledge, which has been the basis for various philosophical theories (Kakabadse et al., 2003). The first practical attempt to capture knowledge in written form occurred around 3000 BC using the cuneiform language, in which knowledge was inscribed with a stylus in wet clay (Kakabadse et al., 2003). Examining knowledge as an organizational resource has been emphasized by many societies and is central to Eastern and Western philosophies (Kakabadse et al., 2003). Being able to record and share knowledge has helped expand and build understanding and what is involved in knowledge and how it is developed (Kakabadse et al., 2003). Throughout history, many philosophers, scholars, and practitioners have tried to understand how to utilize knowledge to bring about change in society, business, and other academic and practical fields (Kakabadse et al., 2003).

The characteristics of knowledge and its role within an organization have also been the subject of debate between scholars and practitioners. In the last century, scholars have shown a great deal of interest in examining knowledge in the fields of economics, industrial engineering, information economics, and modern management. The concept of knowledge has influenced economic concepts, the definition of work, and how workers are viewed, and the role it plays in impacting organizations (Rifkin, 2000). Rifkin used the term “the age of access” to describe how information production, distribution, and access are at the heart of a new economy (Rifkin, 2000). Knowledge
began to pave the way for the age of access that would take shape starting in the late 20th century (Rifkin, 2000). Concepts about knowledge have been applied through research in disciplines such as organizational learning and Alfred Marshall’s work in economics (Marshall, 1920). Additionally, researchers such as Peter Drucker built on the work of Fredrick Taylor, who studied the role of the worker in production (Drucker, 1999). Lastly, Drucker explored how knowledge is changing the role of workers within organizations (Drucker, 1999). These concepts will be discussed in the following sections.

**Economics**

Economists such as Alfred Marshall introduced knowledge as a critical component in explaining their economic theories (Marshall, 1920). According to economist Alfred Marshall in *The Principles of Economics*, “Knowledge is our most powerful engine of production; it enables us to subdue Nature and force her to satisfy our wants. Organization aids knowledge…” (Marshall, 1920, p. 138-139). Introducing knowledge into economic theories opened the door to understand how organizations and economies can use knowledge as a competitive advantage (Mayo & Lank, 1994).

Hayek (1945) made the argument that markets reflect all current knowledge and that fluctuations in markets are the best representation of aggregate knowledge. He believed that a planned economy could never match an open market, because a central planner would not have access to all of the necessary knowledge to be efficient (Hayek, 1945). According to Jensen, “Hayek’s pioneering work provides a point of departure for analyzing how the distribution of knowledge affects organizational structure and its critical role in the development of a theory of organization” (Jensen & Meckling, 1990, p.
3). Jensen also adds, “Hayek presumes that markets automatically move decision rights to the agents with the relevant knowledge, and that those agents will use the decision rights properly” (Jensen & Meckling, 1990, Chapter 1.2). Hayek’s work helped to develop an understanding of price mechanism that serves to share and synchronize local and personal knowledge. This allows members of to achieve diverse and complicated ends through a principle of spontaneous self-organization.

**Industrial Engineering**

Prior to the 20th century, practitioners and scholars were often concerned with industrial concepts and understanding how to increase production (Drucker, 1999). Most of these efforts focused on ways to utilize knowledge to create technology (Drucker, 1999). Fredrick Taylor was one of the first to study the concept of work and develop methods that analyzed how to break each separate action into a task (Drucker, 1999). In task analysis or task management, actions are studied and analyzed to determine what is the most efficient way to perform an action (Taylor, 1911). Manual work does not rely on skill and consists only of repetitive motions (Taylor, 1911). What makes a worker productive is knowledge (Taylor, 1911). Taylor is the first person to apply different ways to think about work in his groundbreaking book *The Principles of Scientific Management* (Taylor, 1911). He began to change how people perceived the interrelationship between productivity, knowledge, and workers (Drucker, 1999). Understanding how workers processed information and looking at ways to make them more efficient were some of the drivers of the research by Taylor and other industrial pioneers.
Information Economics

Knowledge influences a branch of microeconomics theory called information economics, which encompasses concepts such as intellectual capital, intellectual property, knowledge economy, and knowledge assets. Pieter Tordoir explored the development of the new knowledge-based economy in *The Professional Knowledge Economy: The Management and Integration of Professional Services in Business Organizations*. In this book, Tordoir emphasizes knowledge as the fifth great production factor in the economy (Tordoir, 1995). In the past, economists have tried to understand knowledge as a factor in economics (Tordoir, 1995). They have measured and assessed knowledge in terms of the pools of R&D expenditures, patented innovations, licenses, and other forms of knowledge that can be documented (Tordoir, 1995). However, a large amount of professional knowledge is tacit knowledge, which exists within people and is often not included in our discussions of knowledge (Tordoir, 1995). According to Stenmark, tacit knowledge can be viewed as, “… knowledge that cannot be easily articulated and thus only exists in people’s hands and minds, and manifests itself through their actions. (Stenmark, 2000-2001, p. 2)”. For this reason, the concept is hard to grasp even though it is closely tied to the life of business in today’s advanced economies (Tordoir, 1995).

The Age of Access and Modern Management

The age of access and modern management are used to describe the new economy in which knowledge is central to many organizations (Rifkin, 2000). Modern Management refers to the study of workers and how to make them more efficient in the age of access.
These concepts help to show the evolution of knowledge from the industrial age to the information age.

**The Age of Access**

To understand how today’s organizations are using knowledge within their organizations, researchers and practitioners could benefit from understanding the new economy in which many organizations operate. Rifkin used the term “the age of access” to describe how information production, distribution, and access are at the heart of a new economy (Rifkin, 2000). The 21st century has seen technological advances such as groupware, mobile devices, worldwide access, standard infrastructure, and web-based applications become significant enablers of knowledge management (Rao, 2011). These advances have allowed technology to amplify traditional learning processes while also creating new knowledge environments (Rao, 2011).

Hobart and Schiffman (2000) offer another view of information. Information can be seen not only as a phenomenon that appears with modern technology, but rather as a product of complex interactions between technology and culture (Hobart & Schiffman, 2000). A culture that does not foster and reward knowledge sharing cannot expect technology to solve its knowledge challenges (Srinivas, 2000). Advances in knowledge have amplified traditional learning processes and created new knowledge environments.

**Modern Management**

Building on groundbreaking work to understand the worker’s role in production from an economic perspective developed by Fredrick Taylor and others, visionaries such as Peter Drucker began to see knowledge as playing a pivotal role in future economies (Drucker, 1999). Drucker coined the term “knowledge worker” in his 1959 work
Landmarks of Tomorrow (Ichijo & Nonaka, 2007) to help describe the change in how the nature of workers’ production efforts were moving from a manual orientation to being more focused on the use of knowledge to enhance production (Drucker, 1999). Knowledge itself is important, but knowing how to effectively manage workers to extract value out of knowledge is where organizations can achieve a competitive edge (Drucker, 1999). Drucker also held that the basic economic resources of the 20th century consisted of capital, natural resources, or labor, but these will be replaced by knowledge workers and their productivity as the most valuable asset of the 21st century (Drucker, 1999). In Knowledge Worker Productivity: The Biggest Challenge, Peter Drucker underscored how understanding how to manage a new breed of workers will play a role in using knowledge to increase productivity for organizations (Drucker, 1999).

Drucker’s research helped show how knowledge was changing the role of workers in a knowledge-based economy. The roles that workers will play in 21st century organizations is far different from their roles in the past. Providing an understanding of how knowledge will impact workers and helping to define their role in new age economies lay the ground work for future researchers and practitioners to build upon.

Researcher Practical Example

In my experience working and consulting for Fortune 500 companies, I have seen various examples of how knowledge can impact an organization. I worked for a defense contractor and was charged with analyzing their proposal development process. In analyzing the process, I realized that many key participants were not communicating and sharing information. This was leading to costly delays and potential lost business. The simple part of the project was to identify and fix the gaps in the process. The harder part
was to change the mindset of the participants so that they worked as a team and shared information and created viable solutions. Through support from senior management such as one on one meetings with middle management and tying performance to the initiative, the culture began to change and participants began to share and collaborate within the new process. They began to come up with unique ideas and create valuable solutions for their clients. The speed of delivery also improved.

I was able to learn a lot from this project. I began to realize the power of knowledge and ideas. I also realized that workers need a culture that supports knowledge and the exchange of ideas. Making changes centered on knowledge in an organization can have a large impact.

**What is Knowledge? Conclusion**

Knowledge has had an impact in shaping mankind and societies throughout history. In the last century, knowledge has played a significant role in shaping concepts in the fields of economics, industrial engineering, information economics, and modern management. In economics, knowledge has been influential in providing a way to explain various theories and present a perspective on how knowledge can impact an organization. Industrial engineering began to explore how knowledge influences the worker and their role within an organization. Understanding information economics helps to inform researchers and practitioners as to how professional knowledge is derived and applied in the creation of a knowledge-based economy. The age of access provides a perspective on the knowledge-based economy that many organizations operate in. Modern management describes the role of the knowledge worker and the evolving role that knowledge plays in shaping their role in the knowledge-based economy. Lastly, I
have seen first hand how knowledge can have a significant impact on organizations performance.

**Explicit and Tacit Knowledge**

Knowledge is a broad concept that can be further divided into explicit and tacit knowledge. Understanding these subdivisions of knowledge is important to address the research question because it provides insight into how people utilize different types of knowledge.

**Explicit Knowledge**

According to Dalkir, “Knowledge must be codified in order to be understood, maintained, and improved upon as part of corporate memory” (Dalkir, 2005, p. 97). Explicit knowledge can be seen as encompassing knowledge that can be transmitted easily through a documented process (Dalkir, 2005). It is knowledge that has been captured and rendered in a visual format (typically electronically or in a document) (Dalkir, 2005). Explicit knowledge can be seen as knowledge that has been codified (Dalkir, 2005).

**Tacit Knowledge**

In describing knowledge, Michael Polanyi said, “We can know more than we can tell” (Polanyi, 2009, p. 4). Tacit knowledge is more difficult to articulate because it often arises out of experience (McLean, 2004). Tacit knowledge has been described as knowledge that people are not always aware that they possess (Stenmark, 2000-2001). It is not easily shared and can be seen as “know how” knowledge. What one person easily articulates might be hard for another person to understand (Dalkir, 2005). Gilbert Ryle introduced the term and Polanyi stresses that tacit knowledge is captured at the end of a
process of experiences that involve the active creation of knowledge and the organization of an individual’s experience (Dalkir, 2005). Tacit knowledge is important because it serves as a basis for many of the empirical knowledge management research models and helps to better understand the interaction of knowledge between individuals and organizations.

**Tacit Knowledge at the Organizational Level**

Although tacit knowledge is primarily created at the individual level, it can also be captured at the organizational level. Malhotra (2000) developed an approach to organizational knowledge acquisition processes. The steps include grafting, vicarious learning, experimental learning, and inferential processes (Malhotra, 2000). Grafting involves a migration of knowledge between firms (Dalkir, 2005). Huber holds that this is typically achieved through mergers, acquisitions, or alliances in which direct knowledge is passed between firms (Dalkir, 2005). Vicarious learning occurs when one organization observes another organization (Dalkir, 2005). Examples would include benchmark studies to determine best practices. Experimental learning is knowledge that is created within a firm (Dalkir, 2005). Inferential processes occur primarily through interpretation of events, changes, and outcomes relative to activities and decisions made (Dalkir, 2005). The inferential process is sometimes called double looped learning because it involves changing underlying assumptions and frameworks (Dalkir, 2005).

The primary task of management within an organization is in establishing the coordination necessary for this knowledge integration (Grant, 1996). According to Grant:

While organization theory has tended to concentrate upon the problems of achieving cooperation, the complexities of knowledge integration, especially
when tacit knowledge is involved, point to the fact that, even in the absence of
goal conflict, coordination is not a trivial issue. When different types of
knowledge vary considerably in their potential for transfer and aggregation, the
implications for organizational structure and the location of decision-making
authority are profound (Grant, 1996, p. 120).

Organization design suggested by a knowledge-based approach conflicts with those of
other organizational models, such as bureaucratic and information processing approaches
(Grant, 1996). The conflict is in the way a knowledge-based approach to organizational
structure and a traditional bureaucratic structure empower employees to make decisions.
Grant holds that,

An interesting feature of the knowledge-based approach is that it offers a
theoretical basis for understanding a number of recent organizational innovations
and trends. These include the renovation of traditional organizational structures
through delayering and empowerment and the development of new organizational
forms including horizontal and team-based structures and inter firm alliances.
(Grant, 1996, p. 120).

The knowledge-based approach also calls into question other contemporary trends, such
as corporate restructuring and strategic change, to maximize firm value and enhance
shareholder power in corporate management (Grant, 1996). If knowledge is the primary
resource of the firm, and if employees own knowledge, then the individuals who possess
it are the only ones who can exercise this knowledge (Grant, 1996). In this way the
theoretical foundations of the shareholder value approach are challenged (Grant, 1996).

Various approaches have been developed to understand how tacit knowledge
works within organizations (Malhotra, 2000). Having knowledge (such as tacit
knowledge) as the driver within an organization challenges traditional managerial
organizational structures (Grant, 1996).


**Explicit and Tacit Knowledge Conclusion**

Explicit and tacit knowledge are concepts that provide an understanding of how specific types of knowledge are used within an organization. Tacit and explicit knowledge is important to my research because these forms of knowledge represent two dimensions of knowledge in organizations (Alvani & Leidner, 2001). The focus of this research will be on tacit knowledge. I chose to focus on tacit knowledge because it is the predominant type of knowledge used in the organizations and it is central to the development of new knowledge.

**Data, Information, and Knowledge**

Developing a clear distinction between data, information, and knowledge is important in order to establish an understanding of how forms of knowledge are defined and used in organizations and applied in various conceptual models. There are many ways to define data, information, and knowledge (Zins, 2007). Chaim Zins conducted a survey of participants in an international and intercultural panel composed of 57 participants from 16 countries (Zins, 2007). In the article, the participants’ definitions of data, information, and knowledge were varied (Zins, 2007). Zins' study was able to map major issues of scholars engaged in exploring and substantiated the foundations of Information Science (Zins, 2007). He explored conceptual approaches to identify, formulate, and define data, information, and knowledge (Zins, 2007). His goal was to give his reader a better understanding of the issues and the considerations involved in establishing the foundations of Information Science (Zins, 2007). The definitions for the concepts were drawn from many conceptual approaches across disciplines, such as information science and economics (Zins, 2007). There are academics and practitioners
who see an interrelationship among the concepts and others who see them as separate concepts (Zins, 2007).

**Definition of Data, Information, and Knowledge**

Although there are no universally accepted definitions for data, information, knowledge, understanding, and wisdom, there have been some definitions of these concepts (Bellinger, Castro, & Mills, 2004). Data can be seen as being the raw building block of knowledge (Bellinger, Castro, & Mills, 2004). According to Bellinger et al., “…information is data that has been given meaning by way of relational connection” (Bellinger et al., 2004, p. 2). Bellinger et al. define knowledge as, “…the appropriate collection of information, such that it's intent is to be useful” (Bellinger et al., 2004, p. 2). Lastly, Bellinger et al. define wisdom as “…the process by which we also discern, or judge, between right and wrong, good and bad.” (Bellinger et al., 2004, p. 3). There is often confusion in defining data and knowledge.

**Conceptual Interrelationship Among Data, Information and Knowledge**

The conceptual approaches used to define data, information, and knowledge are essential in examining elements in fields such as knowledge management. The three concepts are often seen as being interrelated (Zins, 2007). Since there is no consistent definition, scholars, researchers, and practitioners have to describe each concept in a different manner (Zins, 2007; Davenport, DeLong, & Beers, 1998).

Scholars and researchers have various views of data, information, and knowledge. One-view holds that data, information and knowledge are concepts that are interrelated and follow a sequential order (Zins, 2007). Data can be viewed as the raw material for information and information is the raw material for knowledge (Zins, 2007). According
to Raphael Capurro, “Information is set together out of data and knowledge comes out from putting together information.” (Zins, 2007, p. 481). Other scholars feel that there is no hierarchical relationship among the concepts. Davenport and Prusal refer to the distinction between data, information and knowledge as being operational in nature (Davenport & Prusak, 1998). They believe that we can transform information by means of comparison, consequences, connections and conversation (Davenport & Prusak, 1998). Further, they hold that knowledge creation activities occur between and within humans and that knowledge is considered one of the greatest corporate assets (Davenport & Prusak, 1998).

Russell Ackoff described a conceptual hierarchy pyramid, which starts at the base with data and then builds with information, knowledge, and understanding; wisdom is then at the top of the pyramid. He estimated that “on average about forty percent of the human mind consists of data, thirty percent information, twenty percent knowledge, ten percent understanding, and virtually no wisdom” (Ackoff, 1989, p. 3). Ackoff holds that the first four categories relate to the past and deal with what has been or what is known (Bellinger, Castro, & Mills, 2004). Ackoff continues to explain that only wisdom deals with the future, because it incorporates vision and design (Bellinger et al., 2004). Further, wisdom allows people to create the future rather than just grasp the present and past, and people must move successively through the other categories to achieve wisdom (Bellinger et al., 2004). A critique of the hierarchy is that Ackoff neglected important distinctions observed by information scientists, and his model was directed primarily to the management of organizations (Bernstein, 2011).
According to Torugsa, “Nonaka (1994) presents a dynamic theory of organizational knowledge creation and posits that KM [knowledge management] is crucial in providing the organization with the ability to create/exploit new knowledge continuously in a recursive process that underpins organizational innovation” (Torugsa & O’Donohue, 2015, p. 2).

**Data, Information, and Knowledge Conclusion**

Establishing a clear definition of knowledge allows researchers to differentiate it from information and data. This may allow knowledge to be seen as a function of a particular stance, perspective, or intention of a researcher as it relates to their work (Svendgaard, 2012). Unlike information, knowledge is about action, because information is data formed into usable form during a process (Svendgaard, 2012). Lastly, another way to look at knowledge is to try to understand that its meaning is very context-specific and is related to the situation in which it is retrieved or sensed (Svendgaard, 2012).

Establishing a clear definition between data, information, and knowledge is important for this research study because it establishes a consistent definition of the terms. By having a clear distinction of terms, understanding what is meant by knowledge can shed light onto how participants and organizations understand and view data, information, and knowledge.

**Proliferation of Knowledge as a Discipline in the 1990s**

Having an understanding of the movement that brought knowledge to the forefront of organizational thinking is crucial to understanding knowledge. Building on Peter Drucker’s introduction of the concept of the knowledge worker (Ichijo & Nonaka, 2007), the term knowledge workers encompassed workers in information technology
fields such as programmers, systems analysts, technical writers, academic professionals, and researchers (Ichijo & Nonaka, 2007). Fast-forward to 1991, Thomas A. Stewart introduced the concept of knowledge management and intellectual capital (Ichijo & Nonaka, 2007). His articles helped to spawn corporate buzzwords at the time and allowed the concept of using knowledge in organizations has become more prevalent in the 1990s (Ichijo & Nonaka, 2007).


Articles on knowledge management proliferated in business and academic publications by the end of the 1990’s (Ichijo & Nonaka, 2007). The management movement shift toward knowledge was in response to changes to economic environments, strategic alliances, globalizations, and technological breakthroughs, keeping organizations searching for competitive advantages (Ichijo & Nonaka, 2007). External changes demand continuous and rapid changes within organizations (Ichijo & Nonaka, 2007). All of these changes are driving an interest in knowledge as a competitive advantage in organizations (Ichijo & Nonaka, 2007). In the context of this research study, understanding how these trends impact organizations will help to evaluate how open they are to establishing a knowledge intensive culture.
Knowledge Management

Knowledge management can be seen as an information-handling tool to utilize knowledge within an organization (Mårtensson, 2000). Many researchers and practitioners have seen knowledge management as an emerging and distinct field (Heisig, P., 2014 September). Dr. Karl Wiig first coined the term knowledge management in 1986 (Bouthillier & Shearer, 2002). However, some researchers and practitioners see knowledge management as another label for information management, which is defined as a discipline that analyzes information as an organizational resource (PC Magazine, n.d.). The focus of the information management field evaluates the kinds of data/information an organization requires in order to function and progress effectively (PC Magazine, n.d.). This is in contrast to knowledge management, which seeks to make more efficient use of the human knowledge that exists within an organization (PC Magazine, n.d.).

Knowledge Management and Intellectual Capital

Knowledge management can be seen as an integral part of the broader concept of intellectual capital (Roos, Roos, Edvinsson, & Dragonetti, 1997). Intellectual capital is seen as the management and measurement of knowledge. This concept is inter-linked and cannot be separated from the principle that what you can measure, you can manage, and what you want to manage, you have to measure (Roos et al., 1997). Knowledge management is about the management of intellectual capital controlled by an organization (Petty & Guthrie, 2000). Intellectual capital can be traced to two streams of thought: strategy and measurement (Roos et al., 1997). Within strategy, the focus is on studying the creation and use of knowledge and the relationship between knowledge and
success or value creation (Roos et al., 1997). According to Mårtensson, “Measurement focuses on the need to develop new information systems, measuring non-financial data alongside the traditional financial ones” (Mårtensson, 2000, p. 205).

Knowledge management has emerged from two fundamental shifts in organizations: downsizing and technological development (DiMattia & Oder, 1997). During the 1980s, downsizing was a popular way of reducing overhead and increasing profits (Forbes, 1997). The downside of this strategy was the loss of important knowledge as employees left (Piggott, 1997). Organizations began to realize that they needed to implement knowledge management initiatives to retain and store employee knowledge for future value to the firm (Forbes, 1997). Similarly, technology has increased interest in knowledge management (Hibbard, 1997; Mayo, 1998). The explosive growth of information sources such as the Internet has accelerated the pace of technological change (Hibbard, 1997; Mayo, 1998). Knowledge management has developed as a way to cope with the explosion of information (DiMattia & Oder, 1997). In addition, emerging technologies allows global sharing of information across platforms and continents (DiMattia & Oder, 1997). Knowledge management has emerged as a discipline to help manage knowledge within organizations.

**Knowledge Management as a Distinct Field**

In 1997, Bouthillier and Shearer conducted a survey of 200 companies to determine if knowledge management is a distinct field or a new label for information management (Bouthillier & Shearer, 2002). Empirical evidence showed that 80% of the organizations engaged in knowledge management initiatives (Bouthillier & Shearer, 2002). The study illustrated how knowledge management is a unique field that is distinct
from information management (Bouthillier & Shearer, 2002). According to Bouthillier and Shearer, there is a fine line between knowledge management and information management at a conceptual and practical level (Bouthillier & Shearer, 2002). They suggest that in order to discern what is knowledge and its management within organizations, you have to examine the methodologies [explored later in this chapter in the section- Knowledge Management Models and Knowledge Creation] that are used in knowledge management initiatives (Bouthillier & Shearer, 2002). There is no consensus regarding knowledge management as a new field with its own research base, since much of the terminology and techniques used, such as knowledge mapping, seem to have been borrowed from information management and librarianship (Koeing, 1997).

Streatfield and Wilson present another view of knowledge management as a distinct field. They made the argument that the concept of knowledge management is over-simplified in the knowledge management literature (Streatfield & Wilson, 1999). They make a serious attempt to differentiate how people see knowledge management as a distinct field (Streatfield & Wilson, 1999). According to Streatfield and Wilson,

Knowledge is not a ‘thing’ that can be ‘managed’. It is a capacity of people and communities, continuously generated and renewed in their conversation, to meet new challenges and opportunities. People responsible for knowledge value creation can be inspired and supported, but they cannot be ‘managed’ as people were managed in the industrial era, as mere extensions of the machinery. (Streatfield & Wilson, 1999, p. 70)

Knowledge management continues to emerge as a distinct field. It helps organizations develop their understanding of how to utilize knowledge. As knowledge management as a discipline continues to develop, additional empirical research will help to continue establish the field.
There are alternate views of knowledge management as a tool to utilize knowledge in an organization. Some see knowledge management as being another label for information management and not as a distinct field. As research in knowledge management continues to expand and grow, additional empirical research topics will be explored and empirical research will deepen researchers and practitioner’s understanding of how to utilize knowledge within an organization (Heisig, P., 2014 September).

**Knowledge Management Models and Knowledge Creation**

Research that was conducted to understand knowledge management has also led to an understanding of knowledge creation in organizations (Ichijo & Nonaka, 2007). Knowledge management describes processes, tools, and techniques to provide organizations with new knowledge and to engage in a process of knowledge socialization, combination, externalization, and internalization (Ichijo & Nonaka, 2007). The difference between knowledge creation and general knowledge management lies in its focus on the tacit dimension of knowledge (Ichijo & Nonaka, 2007). The models selected for this section have been selected for this paper because they have the following characteristics (Dalkir, 2005):

- The models take into consideration people, process, organization, and technology.
- The models have been reviewed and critiqued in knowledge management literature.
- The models have been field tested with respect to validity and reliability.

This chapter explores the main theoretical knowledge management models and how each theory approaches knowledge creation. The four knowledge management models that are presented are not the only approaches that researchers or practitioners have used to
describe the genre. The models provided give a perspective on the various approaches to knowledge management and seek to provide a theoretical foundation for understanding knowledge management (Dalkir, 2005). The models attempt to provide a better way to predict, explain, and describe ways to manage knowledge (Dalkir, 2005).

**Von Krogh and Roos Model of Organizational Epistemology**

The Von Krogh and Roos model takes an organizational epistemology approach. The focus of the model emphasizes that knowledge resides in both the minds of individuals (individual knowledge) and in the social interactions that they have with others (social knowledge) (Dalkir, 2005). At a social level, knowledge is said to be embodied and that “everything is known by somebody” (Von Krogh & Roos, 1995, p. 50). Translated to organizations, knowledge resides in the individual and the organization (Dalkir, 2005). In this way, the theory supports the tacit theory of knowledge. This theory reinforces the strong need to maintain links between knowledge objects and those who possess knowledge and experienced users who have applied knowledge in successful and unsuccessful ways (Dalkir, 2005).

**Von Krogh and Roos Model Limitations**

The limitations of the Von Krogh and Roos model center around the mindset of individuals, communication within the organization, the organizational structure, relationship between members of the organization, and, the management of human resources (Von Krogh, Roos, & Kleine, 1998).

1. Mindset-This assumption refers to the mindset of the individuals. If knowledge management is not perceived as being crucial to the organization, then
knowledge-based competencies will not be developed (Von Krogh & Roos, 1995).

2. Communication-Under communication within the organization, if an individual creates new knowledge and there is no common language to express new knowledge, then the initiative may fail (Von Krogh & Roos, 1995).

3. Organizational Structure-The organizational structure could impede the individual and collective knowledge development. If the organization does not support innovation, then the endeavor will not be a success (Von Krogh et al., 1998).

4. Relationship with Members of the Organization -With the development of knowledge, there are issues such as emotions, misunderstandings, and misconceptions. (Von Krogh et al., 1998). Individual members must be eager to share their experiences, and trust and respect must be formed within the organization (Von Krogh et al., 1998). If they do not, then a social or collective knowledge within the organization will not be formed (Von Krogh et al., 1998).

5. Management of Human Resources-Lastly, in regard to human resources, if those contributing knowledge are not evaluated highly and recognized by management, then they will lose motivation to innovate and develop new knowledge for the organization (Von Krogh et al., 1998).

**Von Krogh and Roos Model and Knowledge Creation**

Von Krogh and Roos believed that knowledge could belong to one of two extreme positions (North & Kumta, 2014). They felt that “knowledge is object” and “knowledge is process,” depending on the situation (North & Kumta, 2014). According to North and Kumta:
For instance, if the sales employees know the number of its A-class clients, this is information with the characteristics of an object. However, knowledge exhibits more characteristics of a process if the available information about the customer is to be used in a better way for concluding business (North & Kumta, 2014, p. 43).

The view on knowledge creation follows a self-referential epistemology, which assumes that knowledge is a private history-dependent process within each of us (North & Kumta, 2014). The knowledge of one person is mere raw data for another, and each person shares organizational knowledge with another (North & Kumta, 2014). It is then necessary to find a context that stimulates continuous dialogue within the organization (North & Kumta, 2014). Organizations that focus on this epistemology will often promote small teams and task forces, create “work-out-type” problem-solving groups, and provide experts with stimulating environments (North & Kumta, 2014).

The Von Krogh and Roos model of organizational epistemology focuses on the knowledge of the individuals and the social interactions within an organization that are used to create knowledge. It highlights the ties that occur among individuals within organizations. The limitations to the model center around the following: mindset of the individuals, communication within the organization, the organizational structure, relationship between members of the organization, and, the management of human resources.

**Nonaka and Takeuchi Model of Knowledge Conversion**

Nonaka and Takeuchi studied the success of Japanese companies to understand how they were able to be creative and innovative (Dalkir, 2005). They found that knowledge creation was more than mechanistically processing objective knowledge (Dalkir, 2005). They found that the secret to the Japanese companies’ innovation success laid in a more tacit-driven approach to knowledge management (Dalkir, 2005).
Nonaka and Takeuchi Theory Limitation’s

Nonaka and Takeuchi have been criticized for failing to take into account the first two phases of the expansive cycle, questioning and analyzing the situation. In this way, they neglect the importance of controversies and conflicts in knowledge creation (Engeström, Miettinen, & Punamäki, 1999). Nonaka and Takeuchi view problems as given or as defined by the management without analyzing how the issues originate (Engeström et al., 1999). Another difference in how some researchers and practitioners view Nonaka and Takeuchi’s work may be cultural, in that there is an Eastern and Western cultural lens that influences the research (Paavola, Lipponen, & Hakkarainen, 2004). Many researchers analyze knowledge creation in Western organizations, whereas Nonaka and Takeuchi focused mostly on Japanese organizations in the East (Paavola et al., 2004). Harmony and group thinking are more strongly emphasized in Japanese culture, and individual differences and conflicts are given more prominence than in Western culture (Paavola et al., 2004). The influence of the perception of individuals and work within an organization shaped Nonaka and Takeuchi’s cultural perspective and their impact on the understanding of innovation and knowledge creation that is the basis for their model.

Nonaka and Takeuchi Model and Knowledge Creation

In their 1995 book The knowledge creation company: How Japanese companies create the dynamics of innovation, Nonaka and Takeuchi proposed a theory to explain the phenomenon of organizational knowledge creation (McLean, 2004). They argued that individuals initially create knowledge and that the knowledge created by individuals then becomes organizational knowledge (McLean, 2004). The process that they describe
occurs in four modes of knowledge: socialization (from tacit to tacit knowledge),
externalization (from tacit to explicit knowledge), internalization (from explicit to tacit
knowledge), and combination (from explicit to explicit knowledge), and knowledge
creation consists of a social process between individuals in which knowledge
transformation occurs in a spiral (McLean, 2004; Nonaka & Takeuchi, 1995). The
knowledge spiral is used to explain the transformation of tacit knowledge into explicit
knowledge and back again (McLean, 2004). This theory serves as the basis for
individual, group, and organizational innovation and learning (Dalkir, 2005).

Nonaka and Takeuchi’s model of knowledge conversion has had a profound
impact on the field of knowledge management research. Their model has been used in
other knowledge management conceptual models such as Choo’s sense making model
and Wiig’s model for building and using knowledge. The model has also been studied to
develop an understanding of innovation.

Wiig Model for Building and Using Knowledge

The Wiig knowledge management model is based on the idea that knowledge will
only be useful and valuable if it is organized through a semantic network that is
connected, congruent, and has perspective and purpose (Wiig, 1993). Knowledge has a
hierarchy of being public, shared and personal (Wiig, 1993). The knowledge within each
can be active or passive and can be available in books, manuals, expert systems, and
skills (Wiig, 1993).

Wiig’s model has four dimensions: 1) completeness, 2) connectedness, 3)
congruency, and 4) perspective and purpose (Dalkir, 2005). Completeness refers to the
fact that relevant knowledge is available and can come from humans or knowledge
databases (Dalkir, 2005). Connectedness refers to the connections between the various knowledge objects (Dalkir, 2005). The more connected, then the more valuable and coherent the content (Dalkir, 2005). Congruency occurs when all of the facts, concepts, perspectives, values, and judgments in a knowledge base are consistent (Dalkir, 2005). There should be no internal conflicts or logical inconsistencies. Lastly, perspective and purpose refers to the manner in which people tend to organize knowledge for a specific purpose or point of view (Dalkir, 2005).

The Wiig model its strengths but also has limitations. Its major shortcoming is the scarcity of research and the limited practical experience involving implementation of this model (Dalkir, 2005). It is a theoretical model that has intriguing possibilities but needs to have more practical applications.

The Wiig model approaches knowledge creation by focusing on its belief that for knowledge to be useful and valuable, it must be organized, depending on how it will be used (Dalkir, 2005). The model holds that there are three levels of knowledge: public, shared, and personal. Public knowledge is explicit knowledge. Shared knowledge is held by the individual but shared at work. Personal knowledge is tacit knowledge; it is the most complete form of knowledge and is unconsciously used in daily life (Dalkir, 2005). These dimensions come together to form the basis of the Wiig model’s view on knowledge creation (Dalkir, 2005).

The Wiig model is the most pragmatic model in existence and can be integrated into other approaches (Dalkir, 2005). Its chief strength is in categorizing the types of knowledge to allow practitioners to have a more detailed approach to managing knowledge based on the type of knowledge beyond looking at only tacit and explicit
knowledge (Dalkir, 2005). Its major shortcoming is the scarcity of research and the limited practical experience involving implementation of this model (Dalkir, 2005).

**Choo Sense Making Knowledge Management Model**

The Choo model presents a sense making approach to knowledge management (Choo, 1998). The model focuses on how elements are fed into organizational actions through sense making, knowledge creation, and decision-making (Choo, 1998). In a sense-making model, an individual attempts to make sense of the information coming from an external environment (Dalkir, 2005). According to Choo, “Knowledge creation is precipitated by a situation which identifies gaps in the existing knowledge of the organization or the work group” (Choo, n.d, para. 5). He further adds that:

Decision-making is precipitated by a choice situation, an occasion in which the organization is expected to select a course of action. Completely rational decision-making involves identifying alternatives, projecting the outcomes of each alternative, and evaluating the alternatives and their outcomes according to known preferences or objectives (Choo, n.d, para. 6).

Information is filtered based on established parameters (Dalkir, 2005). According Dalkir, "Individuals construct common interpretations from the exchange and negotiate information fragments combined with their previous experiences” (Dalkir, 2005, p. 58). Dalkir also holds that, “One strength of the Choo KM model is the holistic treatment of key KM cycle processes extending to organizational decision making, which is often lacking in other theoretical KM approaches” (Dalkir, 2005, p. 61). By having a component, which focused on how individuals previous experience influences the model, a different, more personal dimension is added to the model.

One of the limitations of the Choo model is that knowledge is vulnerable to inherited subjectivity in mental models (Svendgaard, 2012). According to Svendgaard:
Since the logical relationship is based upon mental models, it can trick the mind to believe that an objective cause-and-effect relationship objectively exist, and further as well, is objectively sensible for all other actors, even though the relationship in fact only exist logically in the individual’s mind, because of the mental models’ experiences of the past. (Svendgaard, 2012, p. 15).

Mental models can have an individual draw on their previous experiences, and this will give them a false impression of a current situation (Svendgaard, 2012). This will cause them to make a wrong decision because they are incorrectly relying on a past experience that they think is related to their current experience (Svendgaard, 2012).

**Choo Model and Knowledge Creation**

Under the Choo knowledge management model, knowledge creation can be seen as the transformation of personal knowledge between individuals through dialogue, discourse, story telling, and sharing (Dalkir, 2005). The spectrum of knowledge creation is widened as the potential choices in decision-making are increased by the addition of new competencies and choices (Dalkir, 2005). The Choo model draws upon Nonaka and Takeuchi in that the decision making process is then able to increase innovative strategies that feed the organization’s capability to make informed, rational decisions (Dalkir, 2005).

The Choo sense-making model focuses on how elements are fed into organizational actions through sense making, knowledge creation, and decision-making (Svendgaard, 2012). It draws upon Nonaka and Takeuchi’s view of the decision-making process in conjunction with individual constructs of common interpretations from the exchange negotiation of information fragments combined with their previous experiences (Svendgaard, 2012). The primary weakness of this model is the subjectivity that is present when individuals rely on mental models in their decision making process.
Knowledge Management Models and Knowledge Creation Conclusion

All of the theoretical models that were presented have strengths and weaknesses, and they present a different approach to understanding how knowledge is utilized by organizations. All of the models have a point of view on knowledge creation. The theory that best fits with the focus of my dissertation is the theoretical model presented by Nonaka and Takeuchi. This model appreciates the interaction between explicit and tacit knowledge (Nonaka & Takeuchi, 1995). This reflects knowledge that most organizations utilize. Many other conceptual models, such as Choo’s sense making model and Wiig’s model for building and using knowledge, build on Nonaka and Takeuchi’s model. The model focuses on tacit knowledge conversion from an individual to the organization, which also sheds light on the decision making process within the organization. This dissertation will focus on the aspect of organizational knowledge that helps understand tacit knowledge within the organization. This model has an emphasis on knowledge conversion and will help me understand its impact on individual, group, and organizational innovation and learning. Additionally, understanding the academic models that exist will provide an opportunity to evaluate if the models are being used in practical settings.

Knowledge Transfer

Knowledge transfer is an interactive process that involves the interchange of knowledge between knowledge users and knowledge producers (Kiefer et al., 2005). There is some ambiguity over which knowledge transfer strategies should be used in which contexts (Militton, Adair, McKenzie, Patten, & Perry, 2007). This chapter presents an overview of knowledge transfer as it relates to collaboration.
The Emergence of the Concept of Knowledge Transfer

Learning has been identified as an important topic for scholarly inquiry and organizations are one of the main users of knowledge (Gupta & Govindarajan, 2000). Every organization constitutes a bundle of knowledge (Gupta & Govindarajan, 2000). According to Gupta, “…the primary reason why MNCs [Multi National Corporations] exist is because of their ability to transfer and exploit knowledge more effectively and efficiently in the intra-corporate context than through external market mechanisms” (Gupta & Govindarajan, 2000, p. 473). In organizations, communication processes and information flows are what drive knowledge transfer (Gupta & Govindarajan, 2000).

Knowledge transfer has its roots in communication theory (Gupta & Govindarajan, 2000). According to Gupta:

Consistent with these ideas from communication theory, we conceptualize knowledge flows (into or out of a subsidiary) to be a function of the following five factors: (i) value of the source unit’s knowledge stock, (ii) motivational disposition of the source unit, (iii) existence and richness of transmission channels, (iv) motivational disposition of the target unit, and (v) absorptive capacity of the target unit  (Gupta & Govindarajan, 2000, p. 475).

According to Alvani, “The majority of the literature focuses on the third element, that of the knowledge transfer channels” (Alvani & Leidner, 2001, p. 120). In organizations, knowledge transfer channels can be informal or formal, personal or impersonal (Holtham & Courtney, 1998). Informal mechanisms can include unscheduled meetings, informal seminars, or coffee break conversations (Holtham and Courtney 1998). These factors may be effective in promoting socialization among people but may preclude wide dissemination (Holtham and Courtney 1998). Formal transfer mechanisms include training sessions and plant tours (Alvani & Leidner, 2001). They may ensure greater distribution of knowledge but may inhibit creativity (Alvani & Leidner, 2001).
Personal channels can include mechanisms such as apprenticeships or personnel transfers (Alvani & Leidner, 2001). They may be more effective for distributing highly context specific knowledge whereas impersonal channels, such as knowledge repositories, may be most effective for knowledge that can be readily generalized to other contexts (Alvani & Leidner, 2001). Understanding the theory behind knowledge transfer can provide insight into how participants in the research study implement knowledge transfer and to assess how prevalent the practice is in the organization.

Collaborative Learning

People must often work together to create and transfer knowledge. This type of collaborative learning has its own unique definition and challenges. The next section will define what collaborative learning means.

What is Collaborative Learning?

The term collaboration has become a very mainstream term that is used in many different ways. Dillenbourg points out two issues with the overuse of the term:

Firstly, it is nonsense to talk about the cognitive effects ('learning') of 'collaborative' situations if any situation can be labeled 'collaborative'. Secondly, it is difficult to articulate the contributions of various authors who use the same word very differently. (Dillenbourg, 1999, p. 1)

Dillenbourg defines 'collaborative learning' as “...a situation in which two or more people learn or attempt to learn something together” (Dillenbourg, 1999, p. Dillenbourg further expands on each element of the definition of collaborative learning: Each element of this definition can be interpreted in different ways:

- "two or more" may be interpreted as a pair, a small group (3-5 subjects), a class (20-30 subjects), a community (a few hundreds or thousands of people), a society (several thousands or millions of people)... and all intermediate levels.
• "learn something" may be interpreted as "follow a course", "study course material", "perform learning activities such as problem solving", "learn from lifelong work practice".

• "together" may be interpreted as different forms of interaction: face-to-face or computer mediated, synchronous or not, frequent in time or not, whether it is a truly joint effort or whether the labour is divided in a systematic way.”

(Dillenbourg, 1999, p. 1-2)

The term collaborative concerns four aspects of learning: situation, interactions, mechanisms, and effects. A situation can be described as either more or less collaborative. For example, collaboration is more likely to occur between people with similar organizational levels than between a boss and her employee or between a teacher and a pupil) (Dillenbourg, 1999). Interactions can occur between group members, and these interactions can also be more or less collaborative. For example, negotiation has a stronger collaborative connotation than giving instructions (Dillenbourg, 1999).

Mechanisms (i.e. ways of co-constructing a common language) is the third aspect which is more intrinsically collaborative even if, at a very fine level of analysis, the learning mechanisms are similar to those that occurs in individual learning (Dillenbourg, 1999).

The fourth element focuses on the effects of collaborative learning. There are divergent views concerning how to measure the effects of collaborative learning (Dillenbourg, 1999).

Roschelle and Teasley (1995) have provided another definition of collaborative learning. They state that collaborative learning is: “a coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a
problem” (p. 70). Compared to the four criteria listed in the previous section (situation, interactions, mechanisms, and effects), Roschelle's & Teasley's definition does not include a situation (Dillenbourg, 1999). Shared conception can be interpreted in many ways (Dillenbourg, 1999). It can be seen as an effect, as a process by which peers perform conceptual change, or as a condition for conducting effective verbal interactions (Dillenbourg, 1999).

Lastly, collaborative learning approaches are related to so-called 21st century skills, including critical thinking, metacognition, and motivation. A number of researchers have linked collaborative learning to the development of critical thinking (Bailin, Case, Coombs, & Daniels, 1999; Bonk & Smith, 1998; Heyman, 2008; Nelson, 1994; Paul, 1992; Thayer-Bacon, 2000). Adding to skills or abilities that are developed from critical thinking also entails dispositions (Lai, 2011). Researchers have identified dispositions such as attitudes and habits of mind, which includes aspects such as open- and fair-mindedness, a propensity to seek reason, inquisitiveness, a desire to be well informed, flexibility, and respect for and willingness to entertain diverse viewpoints (Bailin et al., 1999; Ennis, 1985; Facione, 1990; Halpern, 1998; Paul, 1992).

**Leading Collaboration Theories**

To have a deeper understanding of collaboration, the focus needs to shift to understanding the theoretical basis for various perspectives on collaboration. Collaborative learning can be viewed as comprising two relatively independent cognitive systems that exchange messages. It can also be seen as a single cognitive system with its own properties. Butterworth holds that psychologists Jean Piaget and Lev Vygotsky both
acknowledge the intertwined social and individual aspects of development (Butterworth & Light, 1982).

**Piaget's Socio-Cognitive theory and the Socio-Constructivist Approach**

The socio-cognitive approach focuses on individual development in the context of social interaction. Piaget's theory focused mainly on individual aspects in cognitive development and inspired a group of psychologists (the so-called “Genevan School”) in the 1970s that undertook a systematic empirical investigation of how social interaction affects individual cognitive development (Dillenbourg et al., 1996). According to Dillenbourg et al.:

> These researchers borrowed from the Piagetian perspective its structural framework and the major concepts, which were used to account for development: conflict and the coordination of points of view (centration’s). This new approach described itself as a socio-constructivist approach: it enhanced the role of interactions with others rather than actions themselves. (Dillenbourg et al., 1996, p. 191)

**Lev Vygotsky Socio-Cognitive theory and the Socio-Constructivist Approach**

The second major theoretical influence on collaborative learning comes from Lev Vygotsky and researchers from the socio-cultural perspective (Dillenbourg et al., 1996), (Vygotsky 1978). The socio-cultural approach focuses on the causal relationship between social interaction and individual cognitive change where the basic unit of analysis is social activity from which individual mental functioning develops (Dillenbourg et al., 1996). The Piagetian approach sees social interaction as providing a catalyst for individual change, which often depends upon individual development, whereas the Vygotskian perspective sees that individuals involved internalize inter-psychological processes (Dillenbourg et al., 1996).
Shared or Situated Cognition Approach

In more recent research studies, the shared or situated cognition approach, which is informed by researchers in sociology, anthropology, and even computer science, emphasizes the social structures in which interactions occur (Dillenbourg et al., 1996). This view sees the environment as an integral part of cognitive activities associated with collaboration (Lai, 2011). Lai holds that, “Accordingly, attempts to investigate collaboration that ignore social structures are likely to be biased” (Lai, 2011, p. 9). Knowledge is not something that is handed down from one partner to another but is co-constructed through interactions among collaborators (Lai, 2011). The shared or situated cognition approach emphasizes that the whole of group behavior is more than the sum of its individual parts (Lai, 2011). Group interactions evolve in ways that are not necessarily predictable based on the inputs of group members and suggest that viewing the group rather than individual group members as the unit of analysis could produce qualitatively different conclusions about collaboration (Dillenbourg et al., 1996).

Leading Collaboration Theories Conclusion

Two influential theoretical perspectives have informed collaboration theories: Piaget’s theory socio-constructivist approach and Lev Vygotsky’s socio-cultural approach. More recent collaboration studies have a shared or situated cognition approach. These theories emphasize the social structures in which interactions occur. Additionally, this view sees the environment as an integral part of cognitive activities associated with collaboration. The implication for this research study is that having an understanding of the theories behind collaboration can provide insight into how it can (or cannot) work effectively.
**Collaboration and Knowledge Creation**

The creation of new knowledge has become a priority in today’s organizations and is key to addressing the research question. New knowledge is a basis for organizational renewal and building a competitive advantage. The current understanding of the organizational processes surrounding knowledge creation is limited. To help understand the research that has occurred in this area, the next section will present some of the research studies and books that have explored this topic.

**Organizational Learning and Knowledge Creation**

To understand knowledge creation in organizations, the first step is to understand how organizations learn. Organizational learning can be described as a systems-level concept (Inkpen, 1996). Knowledge will have a limited impact on organizational effectiveness if individual knowledge is not shared throughout the organization (Kim, 1993). Organizational knowledge creation is a process where the knowledge held by individuals is amplified and internalized as part of an organization's knowledge base.

Researchers into the topic of organizational learning acknowledge that organizational learning originates from employees’ active and collaborative learning (Yang, Watkins, & Marsick, 2004). In this line of research, factors other than learning, such as culture, leadership, system alignments, empowerment, teamwork, and collaboration, have been established as primary factors facilitating learning (Yang, Watkins, & Marsick, 2004). In trying to understand knowledge creation and organizational learning, Nonaka and Takeuchi have explored the subject and have argued that one of the limitations of organizational learning is its failure to develop the concept of knowledge creation (Ichijo & Nonaka, 2007).
A research study by Andrew Inkpen examined knowledge creation through strategic alliances to understand how firms manage knowledge (Inkpen, 1996). In this study, Inkpen found that:

“…firms may view resources committed to knowledge creation as extravagant and wasteful. The view here is that the ability to create knowledge and move it from one part of the organization to another is the basis for competitive advantage. While not all knowledge creation efforts will be successful, some will yield surprisingly important results” (Inkpen, 1996, p. 139).

Additionally, the studies of the joint ventures found that American managers found that the benefits of collaboration served as a legitimate basis for fostering learning (Inkpen, 1996).

Understanding organizational learning provides insight into how people are linked together and work in a social setting. Organizational learning explores key concepts related to how knowledge is transferred in social settings. The first step to understanding knowledge creation in organizations is to understand how organizations learn. Knowledge will have a limited impact on organizational effectiveness if individual knowledge is not shared throughout the organization.

**Collaboration Capability**

Collaboration capability is considered a prerequisite for organizational participants if they wish to leverage knowledge within their organizations (Blomqvist & Levy, 2006). In understanding collaborative capability, Blomqvist and Levy hold that:

The concept is analyzed through a state-of-the-art review of earlier conceptual and empirical research on network collaboration, and as a result we propose that collaboration capability integrates the key elements in many closely related but semantically diverse conceptualizations. As a concept, it underlines the relational perspective and enables knowledge creation in a risky and uncertain environment. It can be defined as ‘the actor’s capability to build and manage network relationships based on mutual trust, communication and commitment’. Furthermore, it could be considered an integrative and cross-level concept.
explaining much of the knowledge creation and innovation in networks (Blomqvist & Levy, 2006, p. 31).

It can be seen as ‘the actor’s capability to build and manage network relationships based on mutual trust, communication and commitment’. Furthermore, it could be considered an integrative and cross-level concept that explains much of the knowledge creation and innovation in organizations (Blomqvist & Levy, 2006).

There are four theoretical approaches to collaboration capability. The approaches are closely related to the developing theory of the firm: the resource-based view (Wernerfelt, 1984; Barney, 1991), the knowledge-based view (Nonaka and Takeuchi, 1995), and the dynamic capability view (Teece & Shuen, 1997; Eisenhardt & Martin, 2000). These approaches emphasize firm-specific and firm-internal issues as bases for competitiveness. The resource-based view holds that firm-specific resources establish a basis for competitiveness (Blomqvist & Levy, 2006). The knowledge-based view promotes individually and organizationally held knowledge as a basis for firm-level capabilities (Blomqvist & Levy, 2006). The dynamic capability view approaches firm performance by viewing it as an organization that includes such capabilities in the form of alliances, acquisitions, intra organizational strategy processes, and R&D as operations demanding strong collaboration (see e.g., Eisenhardt and Martin, 2000).

Collaboration capability is an integrating concept that helps to explain much of the success in knowledge creation and collaborative innovation (Blomqvist & Levy, 2006). It is multi-dimensional and emphasizes relational aspects (Blomqvist & Levy, 2006). Its dimensions such as trust, communication and commitment are the key factors in distinguishing relational exchange from transactional exchange (Blomqvist & Levy, 2006). This is essential for knowledge creation and collaborative innovation in networks.
Collaboration capability can be defined as an individual’s capability to build and manage network relationships based on mutual trust, communication and commitment (Blomqvist & Levy, 2006).

Understand knowledge creation in organizations is the first step in understanding how organizations learn. Next, an organization should develop collaboration capability, which is considered a prerequisite for organizational participants if they wish to leverage knowledge within their organizations. Organizations will develop a competitive advantage by implementing successful knowledge creation efforts should strengthen and reinforce their firm's competitive advantage (Inkpen, 1996). Understanding the relationship between collaboration and organizational learning is important in establishing a basis for organizations developing a strong culture of knowledge integration.

**Gaps in Collaboration Research**

There have been a number of research studies that have provided insight into many important aspects of collaborative learning. However, the gap that is relevant to this study focuses on the lack of research that explores collaboration and knowledge creation. Another gap is related to the lack of research that focuses on management support for collaboration. Research that examines these issues might help in collaboration and knowledge creation initiatives.

**No Prior Research Solely Focuses on Collaboration, Knowledge, and Senior Management Support**

Little research has solely focused on understanding the link between collaboration, knowledge, and senior management support. Additional research should
be conducted that focuses on senior management supporting collaboration and knowledge initiatives. By providing empirical evidence that shows how these initiatives can give an organization a competitive edge would help operationalize these initiatives and give senior management a way to promote and support collaboration and knowledge initiatives. A knowledge-friendly culture (an organizational culture that encourages knowledge based initiatives) may provide a competitive advantage for many organizations (Davenport et al., 1998). Having a culture that values learning encourages employees to learn on and off the job and attracts employees who have a positive orientation toward knowledge (Davenport et al., 1998). Additionally, having an effective knowledge culture within an organization means changing how people think about knowledge and gives a better understanding of complexity, uncertainty, and organic growth (Davenport et al., 1998). These factors will help an organization grow by inviting a deeper analysis that exposes uncertainty (Davenport et al., 1998).

Chapter 2 Conclusion

Knowledge has been used throughout history to advance various societies and disciplines (Kakabadse, Kakabadse, & Kouzmin, 2003). Many organizations are moving away from being entities that make products and are becoming increasingly focused on knowledge as a product (Marr, Schiuma, & Neely, 2002). Just as organizations invested in brick and mortar buildings and plants, knowledge-based assets are becoming significant investments that organizations will be utilizing in the future (Marr, Schiuma, & Neely, 2002). Knowledge can be seen as the key driver in the age of access (Rifkin, 2000). It is seen as a valuable commodity for many organizations (Rifkin, 2000).
Empirical research that seeks to better understand the role of knowledge within an organization helps them move forward.

Understanding knowledge from a historical point of view helps to establish a basis for how knowledge has been viewed during various economic cycles (i.e. industrial age to the information age). This has implications to how organizations view workers, their jobs, and how they will create value. Knowing the historical basis also has implications for understanding modern management.

Research has been conducted to develop an understanding of explicit and tacit knowledge (Dalkir, 2005). These forms of knowledge are most often referred to in much of the literature on knowledge and are helpful in defining how knowledge is used within an organization (Dalkir, 2005). Differentiating between the two types of knowledge is key to understanding how individuals utilize knowledge within an organization (Grant, 1996). Exploring the concepts and theories related to explicit and tacit knowledge is important to this research study because it helps to differentiate the types of knowledge that are used in organizations.

Another one of the keys to understanding knowledge is to be able to differentiate knowledge from data and information (Zins, 2007). Defining data, information, and knowledge are concepts are at the heart of many conceptual models that have been developed to provide a theoretical basis for tools to manage knowledge (Zins, 2007). Data can be viewed as the raw material for information and information is the raw material for knowledge (Zins, 2007).

Articles on knowledge management proliferated in business and academic publications by the end of the 1990s (Ichijo & Nonaka, 2007). External changes demand
continuous and rapid changes within organizations (Ichijo & Nonaka, 2007). All of these changes are driving an interest in knowledge as a competitive advantage in organizations (Ichijo & Nonaka, 2007). Understanding how to utilize knowledge in organizations has spurred the development of disciplines such as knowledge management, which can be seen as a tool for utilizing knowledge within an organization (Mårtensson, 2000). Having an understanding of the theoretical models of knowledge management can help in the research study by evaluating if any of the theoretical models can be used in a practical setting. Organizations absorb trends in different ways and understanding the history of knowledge management proliferation helps to evaluate how organizations used in the research study absorb knowledge management.

The first step to understand knowledge creation in organizations is to understand how organizations learn (Inkpen, 1996). Knowledge will have a limited impact on organizational effectiveness if individual knowledge is not shared throughout the organization (Kim, 1993). Next, an organization should develop collaboration capability, which is considered a prerequisite for organizational participants if they wish to leverage knowledge within their organizations (Blomqvist & Levy, 2006). Over the long term, organizations that have successful knowledge creation efforts should strengthen and reinforce their firm's competitive advantage (Inkpen, 1996).

In reviewing the literature related to knowledge and collaboration, the biggest gap that exists in collaboration research is the lack of studies that explore collaboration and knowledge creation. An additional gap is the lack of examination of how management can support collaboration and knowledge creation initiatives. Focusing on these research
areas could potentially help organizations develop their collaboration and knowledge capabilities.
Chapter 3 – Research Methodology

Organizations around the world are moving from being primarily manufacturing based to more information and technology systems based (Drummond, 1999). Knowledge can provide a competitive advantage in a very crowded landscape as organizations compete for the best leaders to help guide their organizations (Matusik & Hill, 1998). Developing a better understanding of how to utilize collaboration may help to develop new ways to create and distribute knowledge. This may give firms a better insight into how to allocate resources to effectively manage knowledge within their organizations, which can increase their ability to stay ahead of their competition. The goal of this study may help organizations build or increase their organizational knowledge capability through collaboration. Developing an understanding of how organizations are able to (or unable to) develop internal collaborative practices and processes will provide insight into how knowledge is developed in their organization.

The research question that guided this study is: “How does an organization use collaboration to create knowledge?” Because this is a complex and often contested area, it requires a methodology that is best suited to explore the complexities and intricacies of this area. Therefore, this chapter will discuss the decisions and rationales that led to the choice to use an exploratory qualitative interview approach in the research design. In addition, this chapter will discuss the methods that were employed to examine the research question and support the conclusions of the study. I will also discuss the method of data collection, sample size, how the sample was selected, interview questions, how the data from the interviews were analyzed, and the biases and limitations of the study.
Exploratory Qualitative Study

The research study was designed to gather data to address how knowledge is created in the firm through collaboration. The rationale for the qualitative research approach and the selection of interviews as the data collection method is described below.

Qualitative Research Approach

I chose to use an exploratory qualitative methodology after reviewing the collaboration and knowledge creation literature and considering the advantages that this technique would lend to being able to adequately address the research question. Data obtained through qualitative research depends on the human experience and this is often more compelling and powerful than data gathered through quantitative research (Occupy Theory, 2014). Additionally, issues and subjects covered can be evaluated in greater depth and detail utilizing this methodology (Occupy Theory, 2014). The term qualitative research refers to any type of research that produces findings not arrived at by statistical procedures or other means of quantification (Strauss & Corbin, 1998). One benefit of a qualitative approach is that it is well suited for exploratory work. Hughes (2001) holds that understanding universal laws that govern our world require observation and recording of social events and phenomena in a systematic way to allow the underlying principles or truth to be uncovered. Additionally, an exploratory qualitative methodology is best suited to explore areas in which there has been little research to date (Ravitch & Carl, 2016). For these reasons I believe that a qualitative approach is the best method to provide an in-depth understanding of collaboration and the development of knowledge in organizations.
Participant Interviews

In reviewing past research studies during the literature review, I was able to develop an understanding of the key learning’s and the research methods used in prior studies. In determining what would be the appropriate research method for this research study, I noted that many of the prior research studies in the literature review utilized interviews to gather data, and I wanted to add to the body of research by continuing to utilize the same data collection technique. The Sasakawa Peace Foundation (SPF), a private nonprofit organization that was established in September 1986, conducted one of the more extensive studies on knowledge creation. The SPF initiated a three-year research project entitled “International Comparative Study of Knowledge Creation,” in which three joint research groups, were organized with the goal of exploring and finding solutions to issues related to knowledge creation (Ichijo & Nonaka, 2007).

Interviews are an important source of data in a qualitative research project, because they can provide data that is deep, rich, individualized, and contextualized (Ravitch & Carl, 2016). According to Ravitch and Carl:

The primary goals of qualitative interviews are to gain focused insight into individuals’ lived experiences; understand how participants make sense of and construct reality in relation to the phenomenon, events, engagement, or experience in focus; and explore how individuals’ experiences and perspectives relate to other study participants and perhaps prior research on similar topics. (2016, p. 146)

Collaboration and knowledge are complex topics. Since prior research has rarely focused on how the members of organizations view knowledge creation I believed that it was important to give participants an opportunity to express their views through open-ended and in-depth responses to the interview questions.
There is a gap in empirical research that does not adequately address collaboration and knowledge creation in organizations. In reviewing research studies on knowledge creation and collaboration it became clear that an exploratory qualitative approach would be best suited to examining the complexities of these issues.

**Research Sample Size and Participant Selection**

Following the decision to use a qualitative approach and interviews to gather data for the research study, attention was placed on determining the sample size, identifying the appropriate number of interview questions, and selecting participants to be interviewed. The issues that were considered in developing the research sample size, number of interview questions, and participant selection are explored in the next section.

**Research Sample Size**

The sample was selected using a convenience sample methodology. Convenience sampling is a form of sampling that recruits the research study participants from a population that is easily available to the researcher. Interviewees were selected based on their availability to participate in the study (Miles, Huberman, & Saldana, 2014).

For the research study, 21 participants were recruited for the interviews. The number of participants for the research study was dictated in part by the lack of resources and the time frame for this dissertation research. The use of in-depth participant interviews will help mitigate any negative impact of using a small sample size. For example, one of the benefits of interviewing 21 people from different organizations is that it provided me with a wide range of responses. Sometimes people in organizations have similar experiences, processes, etc. Having participants from different organizations increases the likelihood that there will be a range of responses. Additional
strengths and weaknesses of a small sample size will be discussed in more detail in the next sections.

**Strength of Using a Small Size Sample**

Although the sample size for this study is small it has several benefits. First, one advantage of a small sample is that the research question can be addressed in a relatively short period of time (Hacksaw, 2008). Another strength is that it is often better to test a new research question using a small number of participants first before undertaking a larger study (Hacksaw, 2008). This helps to avoid expending too many resources on the research testing (Hacksaw, 2008).

**Limitations of using a Small Size Sample**

However, conducting a research study using a small sample size has risks (Cottrell, 2014): 1) the individuals included in the sample may not be representative of the entire population, 2) The sample may yield results that are more extreme and where outliers carry more weight, 3) The research findings might be overturned by similar research with a larger sample, and 4) Any research generalizations might be invalid.

The dissertation research study attempted to mitigate the limitations noted. This was accomplished by selecting participants who represented a broad range of organizations and levels. Not every organization or industry could be represented but efforts were made to be inclusive of most major industries. And lastly, in making conclusions about the research results I will seek to avoid making generalizations that go beyond the sample.
Participant Selection

The participants represent a variety of organizations and organizational levels and a range of demographics and experiences. For this research study, the 21 participants were selected from organizations in a variety of industries (not for profit, education, finance, medical, and technology). It was important to have as diverse a sample as possible since I used a convenience sampling methodology.

The organizations used in this study consisted of ones in which I have professional contacts. The participants from these organizations represent different organizational levels within the organizations, such as manager, senior manager, or vice president. It was important to include participants with different perspectives in order to gain a diverse perspective on how people in at different levels view knowledge and collaboration. My organizational contacts provided a description of day-to-day assignments and a summary of projects to assist in determining if they were appropriate for the research project. These items were reviewed, and a brief pre-interview screening was held to ensure that the participant had the relevant experience needed, especially if they were not individual contributors in their organizations. The screening helped determine if the participant had experience collaborating within (and in some cases outside) the organization. The participants’ backgrounds were reviewed to ensure they had experience as collaborators and leaders in their organization. After reviewing their backgrounds and screening information, the participants who fit the selection criteria of the study were selected. I then scheduled the interviews with the research participants.
Participant Interview Questions Overview

I will now explore the process of developing and then piloting the interview questions. Qualitative interviews have been frequently used in examining collaboration and knowledge development and I believed that this method would produce fresh insights from a practitioner point of view.

Interview Question Purpose

The data collection method consisted of interviews with the twenty-one participants. I limited the interview questions to 11 questions (in addition to follow up questions) (Appendix C: Data collection instruments (interview questions) because I wanted to keep the total interview time at about 60 minutes (six minutes per question) and I believe that this number of questions would adequately cover the research question and sub questions.

Interview Questions Pilot

The interview questions were piloted on three individuals who provided feedback about the quality and usefulness of each question. Based on this feedback, some of the research questions were modified. Examples of a modified research question is question #2, which was originally “What does the term ‘knowledge’ mean to you?” The question was modified to refer to organizational knowledge. Adding additional context helped to clarify this for the participants. Another example of a modified research question is Question #8; follow-up was originally drafted as “Are there cultural barriers preventing its (social media) adoption?” The phrase organizational cultural barrier was added to specifically refer to the organization’s culture. This was to avoid confusion with a person’s cultural background or heritage.
Open Interview Questions

The interviews were conducted between April 2016 and June 2016. The responses from the participants were analyzed utilizing codes and by industry (for profit and not for profit) and participant level to determine if there were correlations or trends. The interview questions are listed in Appendix C: Data Collection Instruments. The participants were asked to illustrate how their organizations advance knowledge and use collaboration.

Conducting the Interviews

The majority of the interviews were conducted via telephone (20 interviews), with only one conducted in person. The majority of the interviews took about 45 minutes with none going over 1 hour. Participant consent was granted to record the interviews via the consent form (Appendix A) and transcription security was outlined for the research project (Appendix A). The participants’ identities and the organizations’ identities are being kept confidential. This is being done to provide the participants with anonymity and to encourage them to be honest and open in their responses.

Interview Response Analysis

The data from the interview questions was analyzed using thematic analysis. Thematic analysis is a technique that allows the data to be displayed in partitions and to cluster the data into various groups to reveal trends, patterns, and themes from the participants’ responses (Miles, Huberman, & Saldana, 2014). Additionally, thematic analysis is useful in exploratory qualitative interviews studies, as it allows for themes to emerge. This process underwent several iterations to ensure that the results from the
thematic analysis were correct. The next section will discuss the coding process and the development of themes within the participant data.

**Data Coding Process**

Coding is a critical step in analyzing qualitative participant interview data. The coding analysis was conducted using excel. The coding process started before the first interview by pre-classifying the interview questions into categories (i.e. collaboration generating knowledge, social media, barriers, problem solving/decision making, etc.). Every participant interview was first recorded and transcribed into text. The data population from the interviews yielded approximately 375 responses (~11 main questions and ~6 sub questions * 21 participants) that were derived from the participant interviews.

The next step in the coding analysis was conducted by identifying the key dominant words, phrases, and outlier words that make up the coding categories that occurred in the participant responses. The total number of coding categories was then counted to determine the predominate categories. From this process, main categories and subcategories in the participant data are defined. These instances were noted in the coding analysis.

**Thematic Analysis**

The participant interview responses were analyzed using thematic analysis. This method of analysis looks for themes within empirical data across the research questions (Eriksson & Kovalainen, 2008). The goal of the thematic analysis is to use empirical data to identify words or phrases that can be isolated into a theme to identify how the participants across various organizations view knowledge and collaboration’s role in
solving problems and advancing knowledge within their organizations (Eriksson & Kovalainen, 2008).

A first cut of the analysis revised the interview transcriptions to segregate the questions into 11 themes. A second analysis was conducted to synthesize the 11 groups to seven main categories and 22 subcategories. The third analysis level analyzed the six main categories to identify any themes. The analysis looked at recurring themes as well as outliers within organizations and in the overall data set. Outliers were defined as singular responses from the participants. Seven main categories, 22 subcategories, and eight themes were identified and will be discussed in more detail in chapter 4.

Research Bias and Limitations

Research bias and limitations are factors in the dissertation research. Identifying and understanding these factors will help to create a stronger research study. These items have been identified and will be discussed in the following section.

Research Bias

In conducting a research study, biases that are inherent in the researcher’s past experiences may cause the research to lack balance. During my career I have performed consulting and auditing engagements for clients and been a client contracting for operations engagement services. I can see collaboration and knowledge creation issues from both sides of the equation in an organization. This may create a confirmation bias (Nickerson, 1998), and lead the interviewee in a direction, which confirms my belief. Additionally, my past experiences as a business process consultant and manager might cause me to try to identify solutions to eliminate bottlenecks in organizational communication and collaboration. This insight might interfere with listening to the
participant responses and projecting my own experiences and insight onto interviewees, which might influence their answers to the interview questions.

One-way to control for bias is to make sure that the research questions are balanced and do not lead the respondents in one pre-determined direction. To ensure that the interview questions were balanced and not leading, I asked several colleagues to review the interview questions as well as the chair of my dissertation committee. In addition, I piloted the questions with participants who were not included in the study. Another way that I accounted for bias is that I did not select participants with whom I have had a professional relationship or whom I have briefed extensively on my research topic. Additionally, I prepared memorandums for my dissertation chair to review, and an unbiased 3rd party prepared the transcripts. In preparing the thematic analysis, I worked to ensure that I did not interject my own views of interpreting the data.

**Research Limitations**

Research projects are not without their challenges and can have inherent limitations that impact the study. There were three main limitations that were identified in addressing the research question “How does an organization use collaboration to create knowledge?”: 1) lack of standardization of collaboration or knowledge definitions and best practices in organizations and industries, 2) research study participants were often not the decision makers, and 3) lack of resources and time to conduct the research study. The following section discusses these limitations in more detail.

The first limitation is that organizations and industries lack standard collaboration or knowledge best practices. The variety of practices can be seen in various organizations within an industry and even within groups within a single organization.
Various practices and cultures can vary, and this can impact collaboration and knowledge efforts. For example, some organizations such as a start-up technology company is comfortable with using technology to collaborate and in trying new ideas. An older more established company might not be receptive to new technology or ideas. They may prefer face-to-face meetings to a video conference call.

The second limitation focuses on the participants in the study. For this research study, the participants were often not the decision makers who shaped organizational collaboration or had the final decision on how knowledge was distributed within the organization. Because the participants were only providing their assessment of what decision makers had implemented, they may not have been privy to future plans or other changes that would impact collaboration or the creation of knowledge within the organization.

Increased research time and access to resources would help confirm the findings of this research study. It would also allow for some of the limitations raised in this study to be addressed. Initial studies often help to establish the justification for expenditures for larger studies.

**Conclusion**

A qualitative methodological approach was used to address the research question, “How does an organization use collaboration to create knowledge?” I used a convenience sampling method to recruit 21 participants to be interviewed. The open interview questions were first piloted before conducted with the participants. I interviewed 21 participants from a variety of genders, organizations, and organizational
levels. Their interviews were recorded, transcribed, and analyzed to uncover eight main themes.

I also identified any research bias and limitations that would affect the conduct of the research: participants were not decision makers, and lack of resources. Two biases were also addressed: confirmation bias and my past experience.
Chapter 4: Research Results

This chapter presents the results of the qualitative interviews. As a reminder, the research question that guided this research is: “How do organizations use collaboration to create knowledge?” The first section of the results chapter presents a summary of the participants' demographics and an overview of the participant interview responses. The second and third sections focus on the thematic analysis of the participant data. The second section also presents the main code categories and subcategories that have been identified from the research. The third section presents a discussion of the themes that have emerged from analyzing the main code categories and subcategories. By providing a summary discussion of the demographic information and the responses to the interviews and themes derived from those responses, a basis is established for discussion in Chapter 5, in which I delve into the analysis more fully.

Participant Demographics and Participant Responses

Twenty-one participants were interviewed to understand how they view collaboration and its relationship to knowledge creation in their organizations. The interviews were conducted mostly by telephone (20), with one in-person interview, between April 2016 and June 2016. All of the interviews were recorded and transcribed by a third party to ensure accuracy. The research questions yielded 375 responses to the interview questions.
Participant Demographics

The participant interviews were conducted with 21 men and women. The participants came from a wide variety of industries, organizational levels and represented a range of ages. A high-level summary of the demographic data is presented in Tables 1-6.

The genders of the participants in the study were almost equally divided (Table 1).

Table 1 Participant Gender Breakdown

<table>
<thead>
<tr>
<th>Gender breakdown</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 2 presents a summary of the participants’ organization types. Finance, universities, and not-for-profit represented the main participant organization categories. Some participants had not-for-profit senior executive responsibilities with outside industry responsibilities. These hybrids were counted as not-for-profits, with their respective for-profit industry noted.
Table 2 Summary of the Participant Organization Types

<table>
<thead>
<tr>
<th>Organization Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance</td>
<td>6</td>
</tr>
<tr>
<td>University</td>
<td>4</td>
</tr>
<tr>
<td>Marketing/ Manufacturing</td>
<td>3</td>
</tr>
<tr>
<td>Not for profit</td>
<td>2</td>
</tr>
<tr>
<td>Not for profit/Finance</td>
<td>2</td>
</tr>
<tr>
<td>Government</td>
<td>1</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>1</td>
</tr>
<tr>
<td>Not for profit/IT</td>
<td>1</td>
</tr>
<tr>
<td>Not for profit/Medical</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 3 and 4 present a summary of the participant age ranges and organizational levels. Organizational level refers to the hierarchical levels of the participants within the organization. Senior management refers to vice presidents and above, directors are considered mid management, and senior managers/managers are considered lower level management. Twenty participants were in the age range of 40-60 years old, 5 participants were under 40, and 1 participant was under 30. The majority of the participant age ranges are in the 55-60 range (5 participants), 45-50 range (4 participants), 50-55 range (3 participants), 30-35 range (3 participants), and 40-45 range (2 participants). The remaining participants were evenly spread over the remaining age ranges. Table 4 illustrates the participant organizational levels. Senior executives (6 participants) and directors (6 participants) were the predominant categories. The remaining participants organizational levels were managers (5 participants) and vice presidents (4 participants).
Table 3 Participant Age Ranges

<table>
<thead>
<tr>
<th>Participant age range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>25-30</td>
<td>1</td>
</tr>
<tr>
<td>30-35</td>
<td>3</td>
</tr>
<tr>
<td>35-40</td>
<td>1</td>
</tr>
<tr>
<td>40-45</td>
<td>2</td>
</tr>
<tr>
<td>45-50</td>
<td>4</td>
</tr>
<tr>
<td>50-55</td>
<td>3</td>
</tr>
<tr>
<td>55-60</td>
<td>5</td>
</tr>
<tr>
<td>65-70</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

Table 4 Participant Organizational Levels

<table>
<thead>
<tr>
<th>Organization Level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
<td>6</td>
</tr>
<tr>
<td>Senior Executive</td>
<td>6</td>
</tr>
<tr>
<td>Manager</td>
<td>5</td>
</tr>
<tr>
<td>Vice President</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

Table 5 and 6 shows the breakdown of positions by gender, age range, and organizational level. In the male participant sample, the majority of the population is skewed toward senior management in the 55-60 age range.

The female participant sample is a bit more balanced, with the participant organizational levels and age ranges being more evenly spread across the data set. There were no female senior managers in the participant data and the senior management represented in this sample is predominantly male.
Table 5 Female Organizational Levels

<table>
<thead>
<tr>
<th></th>
<th>Director</th>
<th>Mgr.</th>
<th>Vice Pres.</th>
<th>Range total</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-30</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>30-35</td>
<td></td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>35-40</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>40-45</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>45-50</td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>50-55</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>55-60</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>60-65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 6 Male Organizational Levels

<table>
<thead>
<tr>
<th></th>
<th>Director</th>
<th>Mgr.</th>
<th>Sr. Exec</th>
<th>Vice Pres.</th>
<th>Male Total</th>
<th>Range total</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>30-35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>35-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>40-45</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>45-50</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>50-55</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>55-60</td>
<td></td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>60-65</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>65-70</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>11</td>
<td>21</td>
</tr>
</tbody>
</table>

The variety of genders, age groups, and organizational levels of the participants ensures that a single demographic group does not dominate the responses. The participant demographics were analyzed with the responses to identify any possible correlations.

**Participant Responses**

The interviews were conducted with 21 participants and yielded approximately 375 responses. During the interview process, questions were occasionally added or modified as the interviews progressed. For example, a question regarding senior
management’s support was added to the questions, as this was a topic that was recurring in the interviews. Additionally, some questions were discovered to be redundant and were not asked in subsequent interviews. For example, the Question 5 follow-up question “What steps do you normally follow to solve a cross functional issue? Please provide an example.” and the Question 8 follow-up question, “Are social collaborative tools used on an informal and formal basis?” were questions that participants addressed in a previous question. The participant responses served as the basis to determine which questions and responses contained themes that were relevant to addressing the research question.

**Thematic Analysis Coding: Main Categories and Subcategories**

The first step in thematic analysis is to develop a data-coding scheme and identify main and subcategories that exist in the research data. This section will present an overview of the development of the main categories and subcategories. Additionally, this section will include categories that turned out to be not significant.

**Main Category Development**

In the development of each participant question, there was a predetermined main topic for each question, such as organizational knowledge, knowledge resources, distribution system, collaboration, problem solving, big data, or social media (see the list of questions and follow-up questions in appendix C). This was the first consideration in determining the main thematic categories. After being segregated by the predetermined question categories, the interview questions and detailed participant quotations were then populated into an excel spreadsheet that allowed the key words and terms to be identified. The resulting key words and terms were then separated from the main reservoir of
responses where they could be further analyzed for overall characteristics. The analysis consisted of actually counting key words and terms to determine the main categories. The resulting initial analysis of the participant responses yielded 11 main categories.

**Main Categories**

The initial analysis of the participant data yielded 11 main categories. This section presents a summary of the initial 11 main categories that were identified and detail on the five categories that were determined not to be significant.

1. Organizational level: How does the participants’ level in the organization influence the responses?
2. Organizational knowledge: How do participants view knowledge within an organization?
3. Collaboration generating knowledge: What are the participants’ views on how collaboration generates knowledge?
4. Traits of successful collaborations: What traits do the participants view as part of a successful collaboration?
5. Knowledge resources consulted: What are the knowledge resources that the participants consult?
6. Barriers to collaboration: What are the barriers to collaboration that the participants have identified within their organization?
7. Metrics: What metrics do participants or their organizations use to evaluate collaboration?
8. Senior management's support of collaboration: How do the participants view the influence of senior management on collaboration within their organization?
9. Distribution systems: Does the type of distribution system of the organization influence collaboration and knowledge creation?
10. Big Data: How did participants view the impact of Big Data on collaboration and knowledge creation?
11. Social media: Does social media impact how people collaborate and create knowledge within their organization?

After analyzing the participant responses, there were four categories that were not considered to be significant:

**Organizational Level**

The organizational level of the participants was not correlated with the themes identified. The levels of the participants were evenly split, with 11 Managers and Directors and 10 Vice-Presidents and Senior Management. In reviewing the data there were no indications in the participants' responses that organizational levels influenced their responses. In reviewing the responses I looked for indicators such as are they responding more as a decision maker (if they were senior management) or as lower level worker (who may respond about just carrying out tasks without adding much thought to their actions).

**Distribution Systems**

The distribution system (The system/method in which knowledge or collaboration occurs within the organization) theme identified in the interview responses indicated that the distribution system was not a significant driver of collaboration or knowledge creation. The participants only used the distribution system as a tool to facilitate communication, not as a way to create knowledge. Seven participants (44%) utilize MS-
SharePoint systems to distribute information. Nine participants (56%) utilize basic email, databases, and internal websites as a distribution system. In the participation data, 15 participants (75%) indicated that they primarily used associates as their first source of information to drive collaboration. Other resources consulted included independent research, blogs, and other external groups. Much of the collaborative efforts of those interviewed focused on using associates to drive collaboration and not distribution systems.

**Big Data**

In the context of this research project, big data refers to predictive analytics or other analytics to help with problem solving using algorithms to analyze large data output from an organization to harness information and produce useful insights (Loshin, 2015). Participants indicated that big data was not a factor in promoting collaboration or in knowledge creation in their organizations. Seven participants (33%) indicated that they use big data to make decisions or to solve problems. Five participants (24%) saw big data as a database. No participant indicated that big data was a significant driver in collaboration and knowledge creation in their organizations. The participants commented that big data was seen as more of a tool.

**Social Media**

The social media (internal to the organization) theme was not a factor in collaboration or data creation. Ten participants (48%) indicated that they do not really use social media for collaboration and its used more for internal communication. Three participants (14%) indicated that they used phone and email for communication within
their organization. Therefore, social media was deemed to not be a significant driver in collaboration and knowledge creation in the participants' organizations.

**Subcategories**

The resulting 21 subcategories further describe the participant responses. The purpose of identifying the subcategories is to provide more specificity when analyzing the participant responses. Table 7 presents the final main categories, subcategories, and the count of the corresponding participant responses:
Table 7 Summary of Main Categories and Subcategories

<table>
<thead>
<tr>
<th>Main Category</th>
<th>Subcategory</th>
<th>Number of responses</th>
<th>% Participant responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Collaboration generating knowledge</td>
<td>Failure</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Diverse ideas innovation</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Knowledge transfer</td>
<td>4</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Misc. single responses or used org as an example</td>
<td>14</td>
<td>67%</td>
</tr>
<tr>
<td>2) Traits of successful collaborations</td>
<td>Client focus</td>
<td>3</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Group cohesion/focus</td>
<td>7</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Misc. single responses</td>
<td>11</td>
<td>52%</td>
</tr>
<tr>
<td>3) Knowledge resources consulted</td>
<td>No response</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Research and associates</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Blogs/associates</td>
<td>3</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Associates</td>
<td>15</td>
<td>71%</td>
</tr>
<tr>
<td>4) Barriers to collaboration</td>
<td>Economic barriers</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Silos</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Global barriers</td>
<td>3</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>4</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Misc. single responses</td>
<td>10</td>
<td>48%</td>
</tr>
<tr>
<td>5) Metrics</td>
<td>No response</td>
<td>5</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>Light or regular metric use</td>
<td>7</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Lack of metrics</td>
<td>9</td>
<td>43%</td>
</tr>
<tr>
<td>6) Senior management supporting collaboration</td>
<td>Need for Sr. Mgt. input</td>
<td>3</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Collaboration set as a priority</td>
<td>11</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>Achieve individual goals</td>
<td>3</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Late addition question</td>
<td>4</td>
<td>19%</td>
</tr>
<tr>
<td>7) How participants view knowledge in their organization</td>
<td>Participants see knowledge as a tool</td>
<td>20</td>
<td>95%</td>
</tr>
</tbody>
</table>
Subcategory Development

Once the 11 main categories were analyzed and reduced to identify seven main categories, the next step was to identify the subcategories that exist within the seven main categories. Similar to the main category analysis, the subcategory analysis consisted of actually counting key words and terms to determine the predominate subcategories. The resulting analysis yielded 21 subcategories.

Thematic Analysis-Emerging Themes

This section presents the emerging themes derived from analyzing the main categories and subcategories. This is the last step and the main product of the thematic analysis. The development and overview of the emerging themes was conducted after developing the main and subcategories from the participant data. These themes and categories form the basis for the research analysis presented in Chapter 5.

Emerging Theme Development

There were 11 initial main categories and 21 subcategories that were developed after reviewing the participant responses. The trends within the sub codes were analyzed to derive eight themes. The analysis consisted of reviewing the frequency of participant words or phrases used to identify the dominant responses. The phrases or paraphrased themes were then counted, and the dominant theme was used as the final emergent theme. Additionally, selected participant quotes were identified to help support the emerging themes. The resulting analysis yielded a theme of the particular data set that serves as the basis for addressing the research question.
Emerging Themes

This section will provide an overview of the emerging themes. The following eight themes were derived from analyzing the participant data in the main and subcategories:

1. Participants see knowledge as a tool and not a process to be developed
2. Associates are the first knowledge resource
3. Group cohesion and focus are factors of a successful collaboration effort
4. Senior Management seen as not supporting collaboration in the organization
5. Many organizations lack metrics to measure collaboration and knowledge
6. Knowledge transfer is a significant driver of collaboration
7. Time as a barrier to collaboration
8. Collaboration is seen as a Vehicle to Accomplish Individual Goals

Table 8 presents a summary of the identified themes and a count of the participant responses for each theme:
Table 8 Theme Summary

<table>
<thead>
<tr>
<th>Theme</th>
<th>Number of participant responses</th>
<th>Percentage of participant responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Participants see knowledge as a tool and not a process to be developed</td>
<td>20</td>
<td>95%</td>
</tr>
<tr>
<td>2) Associates were identified as the first knowledge resource interviewees consulted when a knowledge deficit was identified</td>
<td>15</td>
<td>71%</td>
</tr>
<tr>
<td>3) Group cohesion and focus lead to successful collaboration and increased learning among participants</td>
<td>11</td>
<td>66%</td>
</tr>
<tr>
<td>4) Senior management should consider collaboration a priority in the organization</td>
<td>11</td>
<td>52%</td>
</tr>
<tr>
<td>5) Most organizations in the sample lack a metric to measure collaboration</td>
<td>7</td>
<td>33%</td>
</tr>
<tr>
<td>6) Knowledge transfer is a key step in collaboration, which allows a proliferation of knowledge in the organization</td>
<td>4</td>
<td>19%</td>
</tr>
<tr>
<td>7) Time is the predominant barrier to collaboration</td>
<td>4</td>
<td>19%</td>
</tr>
<tr>
<td>8) Collaboration is seen as a vehicle to accomplish individual goals</td>
<td>3</td>
<td>14%</td>
</tr>
</tbody>
</table>

The number of responses for each theme identifies how many participants discussed each issue. Many of the participant responses were single responses where no clear trend could be identified. Although themes #6 and 7 were only discussed by 19% of the sample, they are important because they are the dominant response in the categories that made up that theme.

**Detailed Emerging Theme Discussion**

The next section will present a detailed discussion of each emerging theme. The dominant responses that make up the themes are identified in the discussion. Further the themes are supported by quotations from the participants.
Theme One: Participants see Knowledge as a Tool and not a Process to be developed

In the looking at the participant data, one of the emerging themes is that participants saw knowledge as a tool and not a process to be developed. This reminded me of wanting to know the answer to a problem without having any desire to understand why the answer is correct. In support of this idea, Schultze and Leidner stated, “Knowledge has become a primary resource in organizations” (2002, p. 214).

Knowledge can be seen as a tool to help achieve a goal or spur innovation. In addressing the question about how they see organizational knowledge 20 participants (95%) expressed that knowledge is a type of tool used to achieve a goal. These participants often talked about knowledge as policies and procedures: “To me it means my knowledge of the particular organization that I'm working for. How much knowledge do I have of the operation and of the policies and procedures of the operation” (Participant 4, personal communication, April 22, 2016)

Another participant saw knowledge from a historical perspective:

    Historical knowledge, someone who's able to recap what happened with a client 10 years ago and the history with the client, folks who have been around for a long time, at least that's the way it's perceived in this organization. If you have organizational knowledge you've been around for a long time. (Participant 6, personal communication, April 29, 2016)

Further, one participant saw knowledge as being similar to culture, “Organizational knowledge to me is something that can be spread from floor to floor, environment to environment that usually is going to encompass some universal truth that is going to resonate with everyone (Participant 11, personal communication, May 16, 2016).
Expressing knowledge as tool highlights an issue that illustrates how participants have widely different views of what constitutes knowledge.

Some people in organizations referred to knowledge as data or information and use the terms interchangeably when the terms have different meanings (See chapter 2-Data, Information, and Knowledge). Many of the participants use the terms interchangeably and see knowledge as data or information. Data and information are seen as tools and they are not considered knowledge. Knowledge is a process that is to be developed in the organization. An example of this is when one participant discussed information and knowledge in the same context: “I think the goal is to harness that information in somehow a variety of different ways and use that feedback and that knowledge to try and make better strategic type decisions (Participant 5, personal communication, April 25, 2016)” and another participant also used the terms interchangeably, “I guess it's just information that relates to an organization or comes from an organization and it's culture or it's business”, (Participant 7, personal communication, May 3, 2016). One participant saw knowledge as “cumulative knowledge we as company have across all of our departments and may not be centralized”, (Participant 16, personal communication, May 23, 2016). Another participant saw knowledge as “collective knowledge that the organization has around the specific are of expertise that they work in”, (Participant 17, personal communication, May 31, 2016). In all of these examples, participants referred to knowledge as data or information illustrated how they viewed knowledge as a tool.
Theme Two: Associates are the First Knowledge Resource

The second theme focuses on the first resources that participants consulted when trying to resolve an issue. In the responses, participants identified several knowledge sources that they used to help solve issues within their organization. The overriding response in this category (15 participants, 75%) is that participants overwhelmingly turned to associates as their first knowledge resource. Participants (5 participants, 25%) also identified a combination of research, blogs and associates as their sources of knowledge that they used to resolve issues.

A majority of the participant responses identified that participants first turn to associates within their personal and professional circles as the first resource to address issues within their organization. The following quotes illustrative of this: “It would definitely be a person. As much as I wish that there was some sort of manual or database to doing the day to day job” (Participant 3, personal communication, April 21, 2016) and “I would say a majority of time, and it depends on the issue, the sensitivity of the issue and things like that. I would probably speak to one of my trusted colleagues” (Participant 5, personal communication, April 25, 2016). In connection with the first theme, the participants see knowledge as a tool to complete their job, and they reach out to their colleagues if they don’t know something.

A majority of the participant responses showed that if a participant needs support, they reach out to others in their trusted network to help them solve problems. The balance of the participant responses were spread evenly across a combination of participants: first researching an issue then consulting associates (two participants) and first consulting blogs and external groups (two participants). Participants also identified
that they conducted research on an issue before consulting associates. This research often included reading an article or blog about a particular topic or going to an external group for advice. However, even if participants conducted research, they still consulted with associates to discuss the issue. The balance of the participant responses were spread evenly across a combination of participants who first independently researched an issue before consulting associates (two participants) and those who first consulted blogs and external groups (two participants).

**Theme Three: Group Cohesion and Focus are Factors of a Successful Collaboration effort**

The third theme focuses on identifying what makes a collaboration effort successful. The top participant responses (7 participants, 33%) emphasized group cohesion and noted that it is the main consideration in determining what makes a collaboration effort successful. An additional issue that was identified by research participants was client focus (3 participants, 14%).

Many participants (7/33%) cite group cohesion and focus as specific dimensions that drive successful collaborations. One participant described their idea of a cohesive team:

> The collaboration that I’m thinking of is a string quartet as an effective team, as a musical collaboration, as a collaboration of people who are playing instruments who both perform individually and also with one another simultaneously. (Participant 12, personal communication, May17, 2016)

Another participant defined the elements of focus that must come together for a successful collaboration:

> A successful collaboration looks like what we've done with fusion. Where we have an objective, where we have criteria, where we measure it, where we have
incentives, and where we have outcomes that are actually document-able and can be measured. (Participant 2, personal communication, April 17, 2016)

The participants identified group cohesion as necessary for successful collaborations. The participants identified this element as key to the success of various projects because it allowed participants to draw on strengths of other teammates and create unique solutions. Expressing group cohesion by using a string quartet as an example illustrates how harmony and cooperation is important to achieving a beautiful outcome.

The next major participant response related to client focus. Three participants identified client focus as the next major factor in determining a successful collaboration; however, this response may be skewed due to the fact that the respondents who raised this issue were from firms that had a client service focus. One respondent stated:

What it looked like was all of them breaking down their own barriers to get to who the customer was and kind of putting aside their own crap and no longer focusing on their own function but who are we to serve. (Participant 8, personal communication, May 6, 2016)

Another participant echoed this sentiment: “…when different business lines come together to present the company in a holistic fashion, the client tends to really appreciate that” (Participant 6, personal communication, April 29, 2016). Client focus can mean focusing on internal and external clients. Having an orientation to improving service for others who utilize the outcome of a collaboration can provide a feedback mechanism that can help participants improve their work product.

In addressing this theme, participants also identified that those involved in a successful collaboration can use a positive collaborative experience to learn from each other. Four of the respondents (22%) found that in a successful collaboration they were able to increase their learning and assimilate new ideas from others in the organization.
The following quote supports this point, “All the collaborators can learn from each other” (Participant 2, personal communication, April 17, 2016). Another participant added:

I think it would be one where you share ... In our organization, it would be one where you share different projects that have been done or different ways of advertising, for example, or different launch strategies that have been done and then sharing the learning. What worked, what didn't work, the pros, the cons, and the opportunities to understand and do it better in the future. (Participant 3, personal communication, April 21, 2016)

Even though an organization may not have a formal culture that supports knowledge integration, those interviewed seem to recognize that having these aspects can help make individuals and the organization successful (Weak and strong cultures with knowledge integration is explored more in Chapter 5).

**Theme Four: Senior Management seen as not Supporting Collaboration in the Organization**

The degree to which the research participants believed that senior management supported collaboration emerged as the fourth theme from the data. Overall, a majority of participants (11 participants, 52%). felt that senior management set collaboration as a priority in the organization. Participants noted that individuals are incentivized to use collaboration to focus on meeting individual goals as opposed to organizational goals, and collaboration is necessary to progress within the organization. In addition, two participants expressed views that senior management should be more proactive about collaboration to establish a culture that encourages collaboration and allows people to fail.

Participants cited specific dimensions when sharing thoughts related to achieving individual goals as opposed to organizational goals using collaboration. The following
quote illustrates how one participant viewed collaboration as a way that senior management can help individuals focus beyond individual goals:

That when they want to encourage collaboration that it's perhaps ... I guess they find ways that this is beneficial for both parties. If it was beneficial for one party, no one's going to ... When collaboration is encouraged it's always from the perspective of like this is really good for the two of you, collaborate type of thing. There's no other way of encouraging collaboration from what I've seen (Participant 7, personal communication, May 3, 2016)

A participant who held a more senior role in their organization had a contrasting view of senior management’s support of collaboration within their organization. The following quote highlights how senior management sets the tone for collaboration within an organization:

…understanding the mindsets and behaviors at the top of the house, meaning the CEO and his directs, is absolutely critical in terms of understanding how the collaborative culture can and/or the willingness for it to flow has been critical for me as I coach his team to understand where we can go and how we can go throughout the organization. It's huge. (Participant 8, personal communication, May 6, 2016)

These comments illustrate how senior management wants collaboration in theory but in practice, reflect the theme that senior management does not encourage collaboration.

A minority view of the participants also saw collaboration as necessary to progressing within the organization. One participant felt that senior management incentivized, encouraged, and expected participants to focus on collaboration early in their careers. The following quote highlights how they viewed collaboration being incentivized through the performance review process:

Within our annual performance plan review, our annual review system, there are certain behaviors that are being looked at and collaboration is one of them. That we’re looking to see how do people interact. I know as part of our senior management promotion process, which is a pretty robust review for both the SVP and EVP levels, being able to articulate and show very key tangible examples of
effective collaboration skills is part of that process as well. (Participant 9, personal communication, May 10, 2016)

The participants seem to want to collaborate but they also want to perform and be recognized within their organizations.

One participant expressed a view that senior management should support collaboration by establishing a culture that encourages collaboration. The following quote expresses the view that senior management can establish a culture that can provide participants the necessary tools to collaborate and achieve objectives:

…management has adopted these different tools that I’ve just described. Has shown an openness to do that in order to give people the best kinds of tools available to communicate efficiently and share ideas. I think there was also a tone set at the company level with respect to what kind of culture we want. (Participant 20, personal communication, June 22, 2016)

Though this view brings up a noteworthy point to add to the discussion.

Another view of one participant identified accepting failure as part of the collaborative process. The following quote highlights failure as a part of pursuing goals:

One part is I understand some of the vision, the strategy, and the goals. The second piece is I feel empowered to act in pursuit of those visions, strategy, and goals. The third piece is just, failure is part of the process (Participant 19, personal communication, June 6, 2016).

Accepting failure gives people in an organization the freedom to try new things without fear or repercussions if things do not go as planned (Schoemaker 2006). The concept of how weak and strong cultures can help make individuals and the organization successful is explored in Chapter 5.

In developing the theme of how senior management supports collaboration, participants cited many aspects that illustrated how senior management promotes this theme within their organization to support collaboration. A majority of the participant
responses (11) indicated that they felt that senior management encourages collaboration as a priority in the organization. The participants felt that achieving individual goals was encouraged as opposed to working with others collaboratively to obtain goals. Some participants felt that collaboration was seen as something that the participants needed to figure out in order to accomplish their individual goals. Lastly, a one participant expressed views that encouraged senior management to be more proactive about encouraging collaboration and in establishing a culture that allows people to fail.

**Theme Five: Many Organizations Lack Metrics to Measure Collaboration and Knowledge**

In response to the question about metrics used in the participant’s organizations, the answers were almost evenly split. The overriding participant response (9 responses, 43%) was that organizations do not use metrics to measure collaboration. The next major participant response related to metrics found that some organizations had a light to regular use of metrics (7 participants, 33%). For these organizations, metrics were used within the organization but not consistently across the enterprise.

Overall, most of the participants felt that their organizations did not use metrics to evaluate collaboration. The following quotes support the sentiment of the participants: “No we didn’t measure the collaboration so much as we measured the success of the promotion” (Participant 4, personal communication, April 22, 2016); and “I guess that (metrics) is a good way also to measure collaboration even though I'm not sure if there are any we use” (Participant 7, personal communication, May 3, 2016).

In the next tier of participant responses, the sentiment was that participants’ organizations had a light or regular use of metrics to measure collaboration. The
following quote highlights this perspective: “I think qualitative, that’s a little tougher for me to measure but in a community like this you can feel it” (Participant 5, personal communication, April 25, 2016). One participant used metrics but they were done outside of the organization: “the organization that we collaborate with, this consultant that I’ve known for double digit years now. She always provided metrics. We kept our own very lightly” (Participant 14, personal communication, May 19, 2016). While this method will give the organization metrics to evaluate collaboration, the organization is not developing the competency to construct and interpret this type of data internally.

When asked about metrics to measure knowledge within the organization, none of the participants were aware of any metrics in their organizations that covered how to measure knowledge in the organization. This was a little surprising to the researcher, as I would have thought there would have been some attempt to measure this area. Some participants did indicate that there was an interest in collaboration metrics that would be useful to them and their organization. “I don't know if there's anything that we use to measure collaboration. I think finding something like that would be great. I think that metrics would go a long way to better use collaboration” (Participant 18, personal communication, July 2, 2016)

Lastly, one of the participants described specific metrics that they would like to see within their organization:

I would like to see more 360-degree influence in terms of feedback. A lot of times, people think that they're being collaborative, and they're sharing knowledge, but one person may have their orientation towards that, but if we don't take and have a 360 degree feedback, orientation where everybody gets to take it and put information in, so everybody in the collaborate ... All the collaborators can learn from each other, I think we're really kind of spitting in the wind so to speak, because of recusing ourselves. So feedback mechanisms, which after we take care of the other things that I've spoken about, where we can take and recycle
feedback and updates is something that I think we need to look at strategically. (Participant 2, personal communication, April 17, 2016)

There may be a link between senior management not prioritizing collaboration and the lack of metrics to evaluate collaboration and knowledge. Metrics are tools that management uses to evaluate various aspects of the organization. This increases the need for measurement of collaboration and knowledge in organizations.

Theme Six: Knowledge Transfer is a Significant Driver of Collaboration

The sixth theme focuses on how knowledge transfer was an important aspect of the way in which collaboration helped to generate knowledge. The participants had a wide variety of responses to how they view the way collaboration helped to generated knowledge. The leading participant responses about how collaboration generated knowledge covered knowledge transfer (4 participants, 19%); diverse ideas create innovation (2 participants, 10%), and failure can generate knowledge (1 participant, 5%). The next section provides quotes that support these responses.

Knowledge transfer was the issue most discussed by participants when they spoke about how collaboration generates knowledge. When different parts of the team contribute to the final outcome, all members of the team learn from the process and gain knowledge that they didn’t have before by listening to and collaborating with others on the team. They can then take this knowledge and use it to contribute to future teams they are on and perpetuate the knowledge transfer process. The following quotes illustrate the importance of obtaining broad inputs:

…we are constantly trying to make sure we are tapping different parts of the team with different skill sets or backgrounds to really make sure we’ve got good broad
inputs into our process so that we come out with a better decision in the end or a better action in the end. (Participant 9, personal communication, May 10, 2016)

Additionally, another participant added a view that knowledge is co-created and must be communicated to stimulate creativity:

I think knowledge is co-created in a sense that ... Whereas individuals may have particular ... Certainly can come up with ideas and innovations and so it just doesn’t reside within the individual. The individual has to communicate those ideas to somebody some way and get a reaction or get stimulated in some kind of way. I believe again it’s a systems ... I think knowledge is a systems thing. (Participant 12, personal communication, May 17, 2016)

In another set of responses, participants felt that people generate better ideas when they use collaboration to generate knowledge. This was evident in this participant quote:

“I think and then collaboration in the general sense is people working together on a particular project is a direct opportunity to have them benefit from each other’s knowledge as they try to work together to figure out how to solve a problem, they’re engaged with that” (Participant 20, personal communication, June 22, 2016).

One participant also brought up an interesting point related to how failure can generate an opportunity for collaboration and knowledge creation. This is similar to the point about failure that was mentioned in theme two. This adds to the theme by showing how failure creates a learning opportunity where even in failure, knowledge is transferred. The following participant insight illustrates how failure can allow for reflection and future success: “I think after a couple of different failures people tend to see that collaboration throughout the departments usually works best for a successful launch and emotion” (Participant 4, personal communication, April 22, 2016).

The dominant theme of participant responses on collaboration generating knowledge is that participants believed that knowledge transfer was the important factor
in collaboration and generating knowledge. Participants also felt that collaboration created understanding, which aided in innovation. Failure can transfer knowledge and can increase the value of collaboration.

**Theme Seven: Time as a Barrier to Collaboration**

Participants also addressed barriers to collaboration. There are many barriers to collaboration, but specific barriers that affect an organization differ for each organization or individual. Overall responses that participants identified as barriers to collaboration were time (4 responses, 19%) and global locations (3 responses 14%). Economic barriers and silos (each had 2 responses, 10%) were also identified as barriers to effective collaboration. The next section highlights the participant responses that influenced their understanding of collaboration barriers.

Participants identified time as the primary barrier to collaboration. The following participant quotes illustrate the overriding barrier to collaboration: “Barriers again it’s always time and timely launch of the promotion so it takes you a little bit longer to collaborate sometimes but you always end up with a better product” (Participant 4, personal communication, April 22, 2016); and “I think another barrier is just time” (Participant 3, personal communication, April 21, 2016). Understanding barriers is important because it helps identify where in the organization potential bottlenecks can occur.

Many organizations are global, with teams spread out across the United States and around the world. The following quotes illustrate how participants view location and communication differences as contributors to global barriers: “...it is truly global and it is truly ... it's like 35 to 40 brands at any point in time. They all operate completely
differently. We have buildings all over New York and the world so it's very separate”

(Participant 10, personal communication, May 16, 2016).

We also work in a global business with people from around the world, so sometimes not all being present and not all of us having face-to-face contact makes a difference. I would say it's usually some sort of either miscommunication or just random human error, which doesn't happen often. (Participant 15, personal communication, May 21, 2016)

More organizations are becoming global so having an understanding of how their culture impacts the participants is necessary for successful collaboration.

The last significant response categories that participants identified as barriers to collaboration are economic barriers and silos. Economic factors refer to being able to implement ideas that may not be feasible for the organization. One participant highlighted the feasibility of implementing ideas as an impediment to collaboration:

“…people that are inflexible, there’re economic barriers, there’re people that have wonderful ideas but where we are at today, it might not be economically feasible” (Participant 5, personal communication, April 25, 2016). Lastly, silos within organizations were also identified as a barrier to collaboration. One participant highlighted the self-defined barriers that exist within an organization: “ natural barriers that are set up by departments who don’t want to interact with other departments or politics. People hoarding knowledge in a way that gets in the way of things getting done” (Participant 12, personal communication, May 17, 2016). The rest of the responses were spread across generational issues, senior leadership, collaboration being beneficial for both sides, and no barriers.
Theme Eight: Collaboration is seen as a Vehicle to Accomplish Individual Goals

There was a view among three participants (14%) that senior management saw collaboration as an activity that the participants needed to figure out to accomplish their individual goals. The following quote illustrates how one participant viewed senior management emphasis on individual goal completion even if this created conflict within the organization:

How do they support collaboration? They don't. They do not support collaborations and it is a, ‘You need to get this done.’ It's up to whomever that's being told to rally the troops and make it happen. What I'm noticing now on this brand, I'm seeing a lot of conflict between the goals that are set forth by one team versus another. Then the collaboration becomes somewhat difficult because there isn't anything in place because there's not a ton of collaboration that I'm seeing at some of the upper tier levels. (Participant 10, personal communication, May 16, 2016)

If senior management does not support a culture of collaboration, this may impact how participants view group cohesion and knowledge integration.

One participant felt that senior management encouraged collaboration by building this goal into their performance evaluations but did not change the structure of the organization to encourage collaboration:

When you think about silos yeah, we can work in silos. Many times we don’t see each other. In the past, I know that there’s … incorporated into our performance evaluations was … Again a goal, maybe one of my goals in the past has been to collaborate more or our goals in the past for each other has been to collaborate more with the other teams. Again, in terms of our senior management encouraging collaboration amongst our group formalized in the terms of … in terms of performance goals, a thing that comes to mind. (Participant 14, personal communication, May 19, 2016)

The participant’s perception of senior managements support for a collaborative culture appears to impact how employees view collaboration within their organization.
Research Findings Summary

This chapter presents evidence to address the research question “How does an organization use collaboration to create knowledge?” The research findings were broken down into four areas: participant demographics, responses on collaboration, knowledge creation, and metrics. The next section will present an overview of the data that will be analyzed further in Chapter 5.

Demographics

In looking at the demographic data of the participants, the 21 participants reflected a almost equal number of males and females, a range of ages, and organizational levels. Gender did not appear to influence the participants’ responses, and this is consistent with past research studies related to gender and collaboration. Prior research studies have evaluated how gender impacts the perception of women in STEM fields (Flaherty, 2015) and this provides some insight into how gender perceptions can impact participants and their responses. Other research has shown that group composition is a strong consideration when creating teams for collaboration and that collaboration efforts are more successful among groups that are more diverse as opposed to being homogeneous (Fall, Webb, & Chudowsky, 1997; Webb, 1991, 1993, 1995). The researcher noted that with the exception of one organization, most of the participants worked at organizations that strive to have gender balance. Past research studies reported that groups that have gender balance may function better than groups that are male- or female-dominated (Lai, 2011).

Collaboration

The following themes identified in Chapter 4 that support collaboration are:
• Senior management encourages collaboration as a priority in the organization (52%)
• Collaboration is encouraged to achieve individual goals (14%)
• Group cohesion and focus was found to be the overall trait of a successful collaboration (33%) by 7 participants. This also led to increased learning within the organization.
• Time is the predominant barrier to collaboration (19%)

Many of the participants felt open to reach out to colleagues to help gather knowledge to resolve issues. When participants felt that they had a shared objective and not just individual goals, then having the group successfully obtain their objectives would also benefit them and increased their learning among each other. In this way, they were in a way incentivized to help others resolve issues. This is reflected in the theme: Associates are used as the first knowledge resource consulted. Fifteen participants (75%) identified this as a key driver of the theme.

Collaboration was seen by three (14%) of the participants as a vehicle to achieve individual goals. Senior management wanted the participants to collaborate but the emphasis was often on achieving their own career targets. This sends a message to the participants about collaboration that the emphasis is on individual goals.

Finally, the last collaboration related theme that emerged from analyzing the participant data is: time as a barrier to collaboration. This is an important consideration for organizations to be aware of when encouraging collaborative efforts. Senior management can help prioritize these goals and incentive and not punish participants for being more or less collaborative.
Knowledge Creation

Knowledge creation is a by-product of successful collaboration within an organization (Nonaka & Konno, 1998). This is supported by the following themes in the participant data:

- Associates were identified by 15 participants (71%) as a first knowledge resource that participants turn to solve an issue.
- Knowledge transfer was identified by 4 participants (19%) as the key to facilitating collaboration that can lead to knowledge generation.
- Knowledge is viewed by 20 participants (95%) as a tool and not a process to be developed.

Knowledge within an organization occurs on an individual level first and then expands to the organizational level (Nonaka, 1994). When faced with an issue to resolve, participants within their organizations consult others that they know and trust to provide insight and guidance. Once the scope of the issue has been determined and the participant determines if additional resources are needed to address the problem, others are brought in to assist with resolving the issue.

The culture of the organization and the tone set by senior management influences how knowledge is viewed within an organization (Davenport et al., 1998). It is easier to win support to use collaboration to resolve business and organizational issues if senior management supports and incentivizes collaboration to resolve issues. The degree to which senior management supports collaboration appears to influence the level of knowledge transfer that occurs within the organization. Knowledge transfer is facilitated within organizations in which a knowledge-oriented culture is promoted by senior
management (Davenport et. al. 1998). One measurement of knowledge transfer is the degree to which associates turn to colleagues as their first source of knowledge.

Participants viewed knowledge within their organization as a tool to be used. The participants did not view knowledge as a process to create knowledge. This was a surprising theme that emerged from the participant data.

**Metrics**

Metrics was another theme that was noted that is indirectly related to collaboration and knowledge creation. This theme emerged from the participant data:

- Lack of metrics to measure collaboration and knowledge within the organization was identified by 9 participants (43%).

Metrics for collaboration capability serve in the same capacity (Blomqvist & Levy, 2006). Organizations that are serious about promoting collaboration to facilitate knowledge creation establish metrics to evaluate their progress and to provide a solution to achieve a business objective (Hanley, 2007). This feedback can help remove barriers such as time, which was identified as a main barrier to collaboration. Qualitative and quantitative measures will vary by organization but could help evaluate collaboration and knowledge within an organization (Hanley, 2007). Qualitative metrics can be "discovered" from user feedback in the organizations and can be adjusted on an ongoing basis (Hanley, 2007). Quantitative measures can be obtained from usage analysis reports and while they may not be a direct measure of value, certain measures can be used as a proxy to highlight the value they are trying to measure (Hanley, 2007). By having clear measures that will allow an organization’s management to better understand elements
that impact their strategy execution, they can make adjustments that could help make the organizations more efficient and successful.

**Chapter 4 Conclusion**

The research results chapter is a summary and discussion of the data generated from the qualitative interviews. The data was then subjected to a thematic analysis to address the research question “How do organizations use collaboration to create knowledge?”

The analysis of the participant responses started with looking at the results of interview questions, which addressed collaboration and knowledge sharing in the participant’s organizations. The initial analysis took the broad interview question categories and delved deeper into how the participants felt about certain aspects collaboration or knowledge creation in their organization and yielded 11 main categories. In the secondary analysis, the participant’s responses were analyzed for key phrase/topics and whittled down from 11 main categories to seven. Once the seven main categories were identified, the next step was to further define the participant responses into subcategories (21) that exist within the seven main categories. The final step was to analyze the main themes and subthemes to produced eight emerging themes:

9. Participants see knowledge as a tool and not a process to be developed
10. Associates are the first knowledge resource
11. Group cohesion and focus are factors of a successful collaboration effort
12. Senior Management seen as not supporting collaboration in the organization
13. Many organizations lack metrics to measure collaboration and knowledge
14. Knowledge transfer is a significant driver of collaboration
15. Time as a barrier to collaboration

16. Collaboration is seen as a Vehicle to Accomplish Individual Goals

Collaboration and knowledge creation in organizations appear to be largely informal, self-directed, and self-motivated. Senior management does not appear to value or measure collaboration. If a participant needs support, they reach out to others in their trusted network to help them solve problems. Organizations are able to create knowledge but it seems to occur only if there is individual and mutual gain from the collaboration.
Chapter 5 Research Analysis

This chapter analyzes the findings that were presented in chapter 4 in some depth. The data was collected and examined in response to the research question “How does an organization use collaboration to create knowledge?” posed in chapter 1. Two fundamental goals drove the collection of the data and the subsequent data analysis. The first goal was to determine if there was a perceived link between collaboration and knowledge creation. The second goal was to develop an understanding of how organizations use collaboration to create knowledge.

Researchers are able to aid practitioners by providing a body of knowledge for practitioners to help them improve business processes (McNutt, Glassmon, & Glassmon, 2010). This chapter will analyze the key findings, reiterate the research study limitations, discuss recommendations based on the practitioners interviewed for the research study, and explore recommendations for future research.

**Key Findings**

This research study addressed the research question “How does an organization use collaboration to create knowledge?” The analysis of the qualitative interview produced eight key findings: 1) Participants see knowledge as a tool and not a process to be developed, 2) Associates are the first knowledge resource, 3) Group cohesion and focus are factors of a successful collaboration effort, 4) Senior Management seen as not supporting collaboration in the organization, 5) Many organizations lack metrics to measure collaboration and knowledge, 6) Knowledge transfer is a significant driver of collaboration, 7) Time as a barrier to collaboration, and 8) Collaboration is seen as a vehicle to accomplish individual goals.
Without senior leadership support, promotion, and metrics to drive it, collaborative knowledge creation among employees tends to be driven more by self-interest than a desire to contribute to the firm’s knowledge asset base. The next section will discuss the connection between collaboration and knowledge creation.

**Connection Between Collaboration and Knowledge Creation**

This research study confirms and extends the prior research by showing that strong group cohesion is necessary for successful collaboration efforts. It also increases our understanding of collaboration and knowledge creation barriers. The findings indicate that strong group cohesion leads to successful collaboration efforts, innovation and knowledge creation, and knowledge transfer among employees. Barriers to collaboration impede these efforts and understanding how to identify and eliminate these issues should be further explored.

**Prior Research Studies Linking Collaboration and Knowledge Creation**

Linking collaboration with knowledge creation in diverse organizations and industries is an important area of focus in the field of knowledge research. Surprisingly little research has been conducted on the link between collaboration and knowledge creation. Many past research studies (most notably Heisig, 2014) have looked at collaboration, knowledge creation, or knowledge management in companies from a single industry (e.g., Japanese manufacturing, engineering, etc.) (Ichijo & Nonaka, 2007). This researcher was not able to find any studies that focused on linking collaboration and knowledge creation from a practitioner viewpoint. This dissertation research study supports previous collaborative research, which confirms that organizations that support
collaboration and knowledge creation efforts are able to address business issues more effectively.

**Collaboration and Cohesion**

Collaboration helps bring about group cohesion in an organization. Seven participants (33%) in this research study suggested that one of the strongest features of a successful collaboration effort is group cohesion. Team cohesion can be defined as the degree to which team members exhibit interpersonal attraction, group pride, and commitment to the task (Carless & DePaola, 2000; Zacarro, Gualtieri, & Minionis, 1985). The interview data also shows that when senior management encourages and supports collaboration, cohesive groups are formed.

Cohesive groups tend to perform better because they are more motivated, they are able to organize around a common goal, and they work together in a non-coerced manner and ultimately contribute greatly to an organizations long-term success (Joo, Song, Lim, & Yoon, 2012). The participant data in this dissertation research supports prior research on cohesive collaborative groups, because 15 participants (75%) identified the theme of participants turning to their associates as the first knowledge resource consulted. The participant responses showed that they felt this could lead to knowledge transfer (4 participants, 19%) and innovation or knowledge creation (2 participants, 10%). Being able to have the participant’s link collaboration with successful outcomes shows that collaboration can be a powerful vehicle in obtaining organizational goals.

**Collaboration Barriers**

This research indicates that understanding barriers to collaboration is important because it impacts the effectiveness of collaboration. The participant research data
identified the main barriers to a successful collaboration as: time (four participants, 19%),
global barriers (three participants, 14%), economic barriers (two participants, 10%), and
silos (two participants, 10%). Prior research also identified other barriers to collaboration
and knowledge within organizations (Davenport et al., 1998), with these barriers being
noted by two participants in this research study. Some people feel that hoarding
knowledge increases their value as an employee (Davenport et al., 1998). From the
participant data, two participants felt that they had no incentive to collaborate because it
would not benefit them to help others in the organization and that everyone looked out
for their own interests in the organization. One participant stated, “…the idea that if I
don't know (something) then nobody knows, ‘I'm the greatest good’” (Participant 11,
personal communication, May 16, 2016). Similarly, another participant stated, “natural
barriers are set up by departments who don’t want to interact with other departments or
politics. People hoarding knowledge in a way that gets in the way of things getting done”
(Participant 12, personal communication, May 17, 2016).

An organization’s culture can help to break down collaboration barriers. The
objectives of knowledge initiatives must fit the organization’s culture and there has to be
a fit between the objectives of knowledge initiatives and the organization’s culture
(Davenport et al., 1998). According to Dr. Karl Albrecht when discussing silos,
knowledge management, and organizations:

Few organizations today have the kinds of culture, structure, and leadership
needed to turn their collective brainpower into a significant competitive
advantage. The waste of human knowledge – and mental capacity – in most
organizations is so commonplace as to be accepted as an unconscious fact of life.
Lack of common purpose, internal feuds and interdepartmental politics,
malorganization, and a host of other organizational dysfunctions cause an
appalling waste of brain power. (Albrecht, 2002, p. 6).
Organizational barriers often impede how people see knowledge and collaboration. Effectively utilizing knowledge means that people in an organization have to change the way people think about knowledge (Davenport et al., 1998). How participants are able to spend their time (four participants, 19%), global barriers (three participants, 4%), and economic barriers (two participants, 10%) to collaboration and knowledge creation activities can impede effective collaboration and utilization of knowledge in organizations. One participant felt that collaborating with people was sometimes seen as a “favor” in their organization. This is illustrated in the participants quote:

I would say time and also it would depend on how beneficial it is for both sides. If it's me trying to get something done for my team that's going to have no benefits for your team, it seems more like a favor probably” (Participant 7, personal communication, May 3, 2016).

It can be said that from this participant’s point of view, knowledge is shared only when a prior relationship exists. Otherwise the knowledge may not be shared and it will not be beneficial to the person sharing the knowledge.

Connection Between Collaboration and Knowledge Creation and Adding Value to the Organization Conclusion

This dissertation research study confirms and extends prior research by showing that strong group cohesion is necessary for successful collaboration efforts, which can then increase knowledge transfer, innovation, and knowledge creation. Having an understanding of collaboration and knowledge creation barriers is important, because these barriers impact the effectiveness of collaboration efforts. The impact of the connection between collaboration and knowledge creation is just beginning to be understood and should be explored in future research.
Knowledge Viewed as a Tool

Twenty (95%) participants saw knowledge as a tool to be used and not as a process to be developed. Seeing knowledge as a process in an organization would involve senior management incorporating knowledge creation into various aspects of how they view and solve business issues. Ichijo and Nonaka (2007) hold that managers tend to see knowledge from a technology perspective and overemphasize the information technology aspect. Furthermore, they don’t fully utilize knowledge and apply it to business issues (Ichijo & Nonaka, 2007). Ichijo and Nonaka held that “Knowledge management ends up on the agenda for IT managers, not an agenda for top management” (Ichijo & Nonaka, 2007, p. 7). Knowledge in organizations needs to be incorporated into strategy execution to address business issues.

Those interviewed for this study used the terms data and information interchangeably with the term knowledge. Data can be seen as being a raw building block that has no significance or meaning beyond existing (Bellinger et al., 2004). Information is data that has been given meaning by way of a relational connection (Bellinger et al., 2004). Knowledge is a collection of information that is intended to be useful (Bellinger et al., 2004). It was surprising to hear the participants freely mix the terms when describing knowledge and not realizing that they were using the term knowledge to refer to a tool. By mixing up the terms, it may indicate that they (and the organization) don’t see knowledge similar to data to be used to answer a question. How the participants view knowledge is important because if you see knowledge as a tool and not as a process that can build a competency within the organization.
Importance of Senior Management Support of Collaboration

The dissertation research indicated that senior management has a major responsibility for setting the tone for collaboration within the organization. In this research study, 11 participants (52%) believed that senior management set collaboration as a priority in achieving organizational goals. My research builds on prior research conducted by researchers such as Thomas Davenport, who highlight the role of senior management in fostering the conditions for creating a knowledge-friendly culture for organizations (Davenport et al., 1998). Research shows a positive correlation between successful knowledge management and senior management support (Davenport et al., 1998). The findings in this dissertation research project are consistent with previous research findings. This finding also addresses the sub question: How can senior management support collaboration and develop a knowledge-friendly culture?

Senior Management and Establishing a Collaborative Culture

This research found that senior management is often perceived as failing to establish a collaborative culture in their organizations. Three participants (14%) cited that when senior management does not promote a collaborative culture it can be a deficit in their organization. Fostering a culture that incentivizes the sharing of knowledge within organizations helps resolve organizational issues (Davenport et al., 1998). By incentivizing a knowledge sharing culture, employees are encouraged not to hoard knowledge. Additionally, culture impacts the organizational environment and influences how willing people are to collaborate or use knowledge within the organization (Davenport et al., 1998).
According to the participants in the research study, senior management support for collaboration within an organization is often lacking. Without a strong culture of knowledge integration and management support collaboration and knowledge creation depends on individuals. Participants felt that senior management must help establish a collaborative culture within their organizations. Additionally, there should be increased research that focuses on understanding the link between collaboration, knowledge, and senior management support.

**Participants reach out to Associates as the first Source of Knowledge**

Recognizing the first resource that people in an organization turn to for knowledge is important in understanding collaboration, knowledge transfer, and knowledge creation. The sources that people turn to can provide insight into how well an organization collaborates. Additionally, this topic touches on knowledge transfer within the organization. The sources that people turn to can provide insight into how well an organization collaborates.

**Associates as the First Source of Knowledge**

In an age in which employees seem to rely on technology, it was surprising to find that the participants in the dissertation research first looked to colleagues for knowledge rather than online resources. In this research study, 15 participants (75%) said they turned to close associates as a first source of knowledge. Four participants (25%) also identified a combination of research, blogs, and associates as their first sources of knowledge to which they turned to resolve issues. Examining the data in terms of age, it appears that age of the participant did not seem to impact their outlook on turning to associates over online resources.
Trust was the only generalizable reason for the participants reaching out to associates as a first source of knowledge. Trust was cited by four participants (20%) as a factor in them turning to associates as a first source on knowledge. This is a significant finding that can have implications for how an organization designs and invests in future collaboration and knowledge initiatives. The implication of organizational design is that it can affect how organizations carry out designing processes.

One of the observations of the research study is that people don’t appear to follow the collaboration or knowledge management models. People in organizations tend to go to their friends first to help solve an issue. The participants often felt that in their organizations, the focus was on individual efforts. People tend to then hoard knowledge. The incentive to collaborate is generated from a place of self-interest. If this is not the case, then the attempt to collaborate may not succeed. Collaboration and sharing occur in organizations just to get the job completed.

**Knowledge Transfer**

The concept of knowledge transfer focuses on how easily knowledge flows and how accessible it is within an organization (North & Kumta, 2014). Interviewees in this study also highlighted the importance of knowledge transfer when considering ways people collaborate within organizations. Knowledge transfer is one component to knowledge creation in an organization.

An example of how knowledge transfer works is when senior management emphasizes developing a collaborative culture. Person A has a problem, and they believe that Person B could help them. Because the company has a culture that encourages collaboration, Person A goes to Person B for help, and Person B provides the needed
knowledge for Person A to resolve their problem. Now, Person A will know how to deal with this type of problem in the future, so knowledge has transferred from Person B to Person A.

The data from this study indicates that knowledge transfer occurs through informal channels. Participants did not first turn to associates that were designated by their organizations but rather they turned to people they had prior relationships with that they developed on their own. They seemed to develop relationships independently and knew when to reach out to others based on the relationship that they developed.

Better understanding of the resources that people within an organization turn to when resolving issues provides insight into how knowledge flows between employees. This finding addresses the sub question: How is knowledge transferred within an organization? Is it through formal channels or informal networks?

The dissertation research findings have implications for future organizational collaborative and knowledge initiatives. From the participant data, knowledge transfer occurs through informal channels. Participants did not first turn to associates that were designated by their organizations but rather relationships that they developed on their own. Organizations should consider designing systems to take advantage of the collaborative nature of the participants that was identified from the research study. Designing a system where senior management encouraged collaboration and encouraged participants to work together would help to increase knowledge creation in organizations.

**Lack of Collaboration and Knowledge Metrics**

Measuring knowledge is often fuzzy, and knowledge management initiatives, including identifying knowledge metrics, can be an expensive undertaking for
organizations. Therefore, identifying an economic or competitive advantage can generate support for knowledge-based initiatives. One advantage of knowledge-based initiatives is that they can encourage collaboration. This can be used as a two-way street in which the individual’s collaboration capability has a strong impact on both the relationship quality and the mutual performance of the team to create knowledge (Blomqvist & Levy, 2006). However, this performance needs to be measured with standard metrics. According to Blomqvist and Levy:

Universal metrics for team-level, intra-firm and inter-firm collaboration would make it easier for individuals to understand, as similar metrics and language would be used both internally and externally. A universal and cross-level framework of collaboration capability would emphasize the relational perspective on all levels (Blomqvist & Levy, 2006, p. 44).

Senior leadership should seek to establish a strong culture of knowledge integration. This action may encourage the development of metrics in organizations. By supporting collaboration and knowledge creation metrics can also help drive behavior in organizations (Dover, 2004). Metrics are important tools that are the byproduct of supportive knowledge integration cultures.

**Difficulty of Defining Collaborative and Knowledge Metrics**

Metrics and related metrics on different levels can help managers in an organization emphasize progress toward business objectives (Blomqvist & Levy, 2006). Measuring collaboration and knowledge could help define an area that is often a very challenging aspect to manage by focusing on relational attitudes and behavior (Blomqvist & Levy, 2006). From this dissertation research, 9 participants (43%) cited a lack of collaboration and knowledge metrics as a deficit area for many organizations. The participants identified that the quantitative and qualitative metrics that are used (if at all)
vary by organization, and different organizations do not use consistent baseline metrics. For example, knowledge-based firms such as Ernst and Young measure the knowledge they reuse in the form of proposals, presentations, and deliverables tied to closing sales (Davenport et al., 1998). This type of knowledge metric may not fit the business models of other organizations. Metrics have been identified to measure collaboration (Noble & Letsky, 2003; Noble & Buck, 2000), but because of the fuzzy nature of knowledge, there has not been a great deal of research to develop knowledge measurement metrics in organizations.

One of the significant findings from the dissertation research is that participants' interviewed indicated that organizations lack collaboration and knowledge metrics. Based on the participant feedback in the dissertation research, 9 participants (43%) cited a lack of collaboration and knowledge metrics as a deficit area for their organizations. Being able to measure collaboration is a key element that ties to some of the other themes together, such as senior management support for collaboration and knowledge transfer. By being able to measure collaboration, senior management is able to provide feedback and to make adjustments on collaboration efforts. Providing measurement tools to management on the successes of collaboration and being able to quantify the success of the endeavors would go a long way to justify the continuation of collaborative initiatives. There has been some research into collaboration metrics, but because of the fuzzy nature of knowledge, there is no consensus in the literature on how to measure knowledge in organizations.
**Key Findings Conclusion**

The key findings identified from this research study are: 1) there is a connection between collaboration and knowledge creation, 2) knowledge is often viewed as a tool, 3) the benefits of senior management support of collaboration within an organization, 4) participants reach out to associates as the first source of knowledge, and 5) lack of knowledge metrics.

Organizations are able to use collaboration to create knowledge by having senior management support collaboration and create a culture that supports collaboration. When collaboration is encouraged in organizations, people will first turn to colleagues and transfer knowledge. Creating cohesive groups will help organizations work together to transfer knowledge and create knowledge to solve issues that they face. Table 9 illustrates this relationship:

**Table 9 Overview of How Collaboration Leads to Knowledge Creation**

![Diagram showing the relationship between Senior Management Support, Associates, Collaboration, Knowledge Transfer, and Knowledge Creation.]

The key findings of the dissertation contribute an important perspective to the body of collaboration and knowledge creation research studies by helping to establish that collaboration is an essential to creating knowledge within an organization. The key findings also provide a basis for recommendations for future research studies as will be discussed in a later section.
Research Study Limitations

The research study was constrained by several limitations. First, the research study only included a small sample. Next, the sample selection used a convenience sample methodology and utilized a population that was available geographically and immediately to me. Additionally, the participants of the study were often not the decision makers who shaped collaboration or had the final decision on how knowledge was distributed within the organization. The fifth limitation was that the study covered a wide range of industries, but no technology companies were represented.

Bias was controlled in the study by reviewing the relevant research literature and having my colleagues and dissertation committee review my interview questions. Additionally, the interview questions were piloted and were adjusted based on the reviewer’s feedback. These steps helped mitigate the bias in the dissertation research.

Recommendations Based on the Practitioners Interviewed in the Study

Several recommendations can be proposed based on the analysis of the participant data in this study. The recommendations focus on how senior management can be the architects of collaboration and knowledge creation in their organizations to effectively solve business issues (Ichijo & Nonaka, 2007). Senior management should adjust their approach to collaboration and knowledge creation to solve business issues and not view these tasks as a silo project that is the responsibility of IT or a separate department (Ichijo & Nonaka, 2007). Senior management must incentivize and encourage collaboration and knowledge creation/sharing within the organization. The next section will expand upon three specific recommendations for senior management within organizations: 1) develop metrics tied to strategy execution, 2) support a culture in which people are allowed to
make mistakes and reflect on knowledge, and 3) create effective knowledge creation and management programs.

**Metrics**

More organizations could benefit from using metrics to evaluate collaboration and knowledge creation efforts and their impact on resolving business issues. As previously noted, the research participants identified a lack of metrics in their organizations as a central theme. One participant said:

> One of the things that I was wishing that we would have is, we would have a more orientation towards measurements that would take it and give people incentive to take it and share information. The weakness I think that we have is that there is no specific criteria, no specific measurement, and no specific incentive for people to take it and share information, so consequently, information flows vertically very well, but it doesn't flow horizontally very well between functions (Participant 2, personal communication, April 17, 2016).

There should be future research conducted to identify qualitative and quantitative measures that better tie collaboration and knowledge creation efforts to strategy execution. If empirical data on metrics can be developed that shows which metrics are accurate predictors of success on collaboration and knowledge creation efforts, then these metrics can be widely utilized to better help organizations solve business issues, increase performance, and develop a competitive advantage. Collaboration metrics drives behavior. Senior management can use metrics to establish the type of culture that they would like within their organization. It gives them insight into how well their efforts are being received and where they need to tweak their efforts.

**Culture**

Senior management could benefit from striving to create a culture that encourages and incentivizes collaboration and knowledge creation. Once participant highlighted this
sentiment as necessary to increasing collaboration in their organization: “Does the senior management have a way of, say, incentivizing people to do that? Do people just do it because they know it's the right thing to do?” (Participant 13, personal communication, May 18, 2016). To cultivate knowledge requires reflection, and organizations must allow people to make mistakes to learn (Schoemaker & Gunther, 2006). Culture change must start at the top of the organization and proliferate through to the lower levels to allow the message to resonate within the organization (Ulrich, 1998).

**Strong and Weak Cultures of Knowledge Integration**

Organizations must understand what type of culture they operate in and how that impacts collaboration and knowledge integration. An organization can have a strong or weak orientation toward knowledge integration. The two conceptual models of strong and weak knowledge integration help illustrate the two cultures and are presented in the next section.

**Strong Culture of Knowledge Integration**

Within a strong culture of knowledge integration, an actor facing a business problem or need consults a knowledge resource and individual associates (who work collectively) to help address the business issue (Chirico et al., 2008; De Boer, Van Den Bosch, & Volberda, 1999; Jacquier-Roux et al., 2012). The associates working collectively across functions such as finance, operations, marketing, and sales develop an integrated approach to resolving the business issue or need (Chirico et al. 2008; De Boer et al., 1999; Jacquier-Roux et al., 2012). By working collectively, the actor and the associates can develop a more robust solution (Chirico et al. 2008; De Boer et al., 1999; Jacquier-Roux et al., 2012).
Table 10 illustrates a strong culture of knowledge integration that shows a feedback loop within the organization (Chirico et al. 2008; De Boer et al., 1999; Jacquier-Roux et al., 2012). This feedback mechanism collects the solutions within the knowledge management resource to increase organizational learning (Chirico et al. 2008; De Boer et al., 1999; Jacquier-Roux et al., 2012). Having a repository of solutions and outcomes provides a reservoir of knowledge that can be consulted and revised to help address future business issues or problems (Chirico et al. 2008; De Boer et al., 1999; Jacquier-Roux et al., 2012).

Table 10 Strong Culture of Knowledge Integration

![Strong Culture of Knowledge Integration Diagram]

Weak Culture of Knowledge Integration

Similar to a strong culture, in a weak culture of knowledge integration, an actor facing a business problem or need consults individual associates (often working independently) to help address the business issue (Chirico & Salvato, 2008; Dutrenit,
The individual associates develop independent solutions, with each associate working in a separate capacity to solve the issue (Chirico et al., 2008; Dutrenit, 2000; Jacquier-Roux et al., 2012). In this model, the actor then has several outcomes that have been developed with the individual associates (Chirico et al., 2008; Dutrenit, 2000; Jacquier-Roux et al., 2012). The actor then has to weigh the solutions to determine which will provide the best outcome to solve the business issue or need (Chirico et al.; Dutrenit, 2000; Jacquier-Roux et al., 2012).

There are several differences between the strong and weak culture of knowledge integration. One of the main differences (highlighted in table 11) is the lack of a feedback loop within the organization (Chirico, 2008 et al.; Dutrenit, 2000; Jacquier-Roux et al., 2012). In this conceptual model, there is no knowledge capture or feedback loop (Chirico et al., 2008; Dutrenit, 2000; Jacquier-Roux et al., 2012). The solutions and outcomes reside in individual actors within the organization. Very little organizational learning occurs (Chirico et al., 2008; Dutrenit, 2000; Jacquier-Roux et al., 2012). This is one of the main drawbacks of a weak culture of knowledge integration.
Knowledge Creation and Management Programs

To effectively utilize collaboration and knowledge creation to resolve business issues, organizations could create effective knowledge creation and management programs (Ichijo & Nonaka, 2007). Firms experience difficulties in developing effective knowledge creation and management programs for two main reasons: 1) Participants in this research believe that their organizations had competing goals that they were pressured to pursue, including both individual and organizational goals. According to Ichijo, “Traditional disciplines do not lend themselves to knowledge management and should be revised so that the knowledge-based competence of a corporation can be managed effectively and efficiently” (Ichijo & Nonaka, 2007, p. 7). He added, “Management of knowledge should rely on new sense of emotional knowledge and care in the organization, one that highlights how people treat each other and encourage creativity even — playfulness. It throws out challenges to traditional disciplines” (Ichijo & Nonaka, 2007, p. 7) 2) There is a vague practical application of knowledge
management theoretical framework to business inputs (Ichijo & Nonaka, 2007). Senior management should develop a better understanding of knowledge management and how it can be applied to their originations. This approach might be able to help develop knowledge creation to resolve business issues that they face.

Too few research initiatives analyze how knowledge management can specifically contribute to overcoming management issues (Ichijo & Nonaka, 2007). Participants in this dissertation research identified that collaboration works better when senior management lends its support. Knowledge creation in an organization is not an individual activity, and it needs collaboration to be effective. Managers often discuss knowledge management in a context where it is not applied to actual business issues and is seen as more of an agenda item for information technology departments (Ichijo & Nonaka, 2007). Organizations could benefit from changing their overall approach to effectively implement collaboration and knowledge creation programs that will help to better address business issues (Ichijo & Nonaka, 2007).

Increased Future Research Studies to Include more Technology Firms

One limitation of the study is that there were no participants from technology firms. Organizations that are more technologically focused may better integrate technology into collaboration efforts. Future research should focus on identifying how collaboration is impacted by better utilization of technology.

Future research that increases the types of organizations that participate in the studies will provide a diversity of participants who can bring unique perspectives. Firms that are more technology focused might offer glimpses into the future of collaboration or knowledge creation. Developing an understanding of what collaborative and knowledge
creation technologies exist and how they are being used might help create awareness and aid in their proliferation to other organizations.

**Discoveries from the Dissertation Research Study on Collaboration and Knowledge Creation**

In conducting this dissertation research, there were several discoveries that were made. The first discovery is about what constitutes the knowledge creation process. It starts when an organization is able to use collaboration to create knowledge by having senior management support collaboration. When collaboration is encouraged in the organizations studied, people will first turn to colleagues. Creating cohesive groups will help organizations work together to transfer knowledge and create knowledge to solve issues that they face. Second, there are very little empirical studies on collaboration and knowledge creation. Third, participants in this research study saw knowledge as a tool and not as a process. Additionally, most of the collaboration and knowledge research has been conducted by academics. Lastly, the concepts of collaboration and knowledge creation are viewed separately in organizations and they are studied as separate concepts.

**Recommendations for Future Research**

This research study examined the relationship between collaboration and knowledge creation an area that has not previously been studied in depth. The study provided certain insights for collaboration and knowledge creation that led to several recommendations for future research: 1) weak and strong cultures and knowledge integration, 2) a larger stratified research study, 3) technology and its impact on collaboration and knowledge creation, 4), and 5) senior management supporting collaboration and knowledge creation.
Larger Stratified Research Study

One of the limitations noted earlier in this dissertation research is that technology based companies were not represented in the study. A larger research study could expand the types of organizations included in the scope of the study. By using a larger participant population that could include more organizations and also increase the variety of participant organizational levels. A future study could stratify the participant population to better isolate and focus on how senior management and lower levels in the organization view collaboration and knowledge creation. Having an equal number of senior management and lower level participants would provide clearer insight into how these groups view collaboration and knowledge creation. Senior management can provide insight into understanding the barriers to changing the thinking about knowledge and collaboration within their organizations. Additionally, getting input from lower levels would help provide feedback to senior management to help them understand any frustrations and how others in the organization view their decisions.

Technology and its Impact on Collaboration and Knowledge Creation

As computer-based collaboration becomes more prevalent, more research needs to be conducted in this area. The world is becoming more connected virtually, and the impact that this medium has on collaboration should be examined. This area will continue to be more relevant and in need of research as technology-based collaboration continues to proliferate.

The participants in the research study did not indicate that technology, such as social media and big data, were significant drivers of collaboration and knowledge creation in their organizations. A limitation of the research study is that many of the
participant’s organizations were not technology oriented. Technology organizations would likely provide responses that might show a bigger impact of technology on collaboration and knowledge creation.

In the past, organizations would invest in research and development departments to drive technology innovations within the firm (Chesbrough & Crowther, 2006). Today, more first adopters of technological innovations are companies that are in concentrated industries (industries with few firms) with limited price intensity (Gatignon & Robertson, 1989). These firms present a more hospitable environment for new technologies because of the absence of resource constraint pressures with a technology focus (Gatignon & Robertson, 1989). I feel that efforts to increase the number of empirical research studies that focus on collaboration and knowledge creation technology may help spur its acceptance by mainstream organizations. Furthermore, this may help involve technology to possibly increase the effectiveness of collaboration and knowledge initiatives.

A potential future research study could extend existing research to focus on how organizations use technology to drive collaboration and knowledge creation. The addition of technology-oriented organizations such as engineering forms can help advance this topic because firms that are more technology focused might be more inclined to utilize technology to collaborate and create knowledge. It would be worthwhile to conduct research to determine if technology-oriented organizations are early adopters of knowledge technology and would thus be receptive to new approaches to collaboration and knowledge creation (Matusik & Hill, 1998). Concepts such as virtual collaboration allow organizations to develop solutions and create agility in action, but this concept is more prevalent in technology organizations and may not be
mainstream for organizations in all industries (Wellman et al., 1996) (Matusik & Hill, 1998). Future research could also focus on how to apply a broader base of technology to a wider variety of organization types (e.g., service, manufacturing). Additionally, research needs to be conducted to identify barriers to implementation, such as expense, culture, lack of standard technology, or changing technology. Developing a better understanding of these barriers could help to make collaboration more robust in organizations.

**Barriers to Collaboration**

One area for future research would be to examine the impact that barriers have on collaboration and how these barriers might decrease the speed at which projects are delivered. Research should focus on barriers to collaboration and make suggestions on how to remove or limit the barriers. Economic barriers (2 participants, 10%), silos (2 participants, 10%), global barriers (3 participants, 14%), and time (4 participants, 19%) were identified as barriers in the participant data. In a larger research study with more diverse organizations, additional barriers might be discovered.

Research into identifying and removing collaboration barriers would help make collaboration more productive and cohesive. Increased empirical evidence into collaboration barriers would help senior management address business issues more effectively. Developing a better understanding of collaboration barriers would also positively impact future studies that look at the link between collaboration and knowledge creation in organizations.
Senior Management Supporting Collaboration and Knowledge Creation

There is not a significant amount of research that has the sole focus of understanding the link between collaboration, knowledge creation, and senior management support. Having additional research that focuses on senior management support for collaboration and knowledge initiatives would help increase senior management focus on ways of creating a collaborative culture. Establishing a clear link between collaboration, knowledge creation, and senior management support may lead to an increase in these initiatives in organizations.

Future research on various aspects of collaboration and knowledge creation can extend the research presented in this study. Candidates for future research include a larger stratified research study, understanding technology and its impact on collaboration and knowledge creation,, research examining barriers to collaboration, and develop a better understanding how senior management can support collaboration and knowledge creation. Future research efforts can help provide organizations with a better understanding of the impact that collaboration and knowledge creation can have on making their organizations more efficient and developing a competitive advantage.

Conclusion Research Analysis

This dissertation research study used an exploratory qualitative method to address the research question “How is knowledge created in a firm through collaboration?” Five findings from this research study extend the current research: 1) connection between collaboration and knowledge creation, 2) knowledge is viewed as a tool, 3) the importance of senior management supporting collaboration within the organization, 4)
participants reach out to associates as the first source of knowledge, 5) lack of knowledge metrics.

Discoveries from the research study include: organizations are able to use collaboration to create knowledge by having senior management support collaboration. When collaboration is encouraged in the organizations studied, people first turned to colleagues to find answers to their questions. Creating cohesive groups will help organizations work together to transfer knowledge and create knowledge to solve issues that they face. Second, there are very few empirical studies on collaboration and knowledge creation. Next, participants in this research study saw knowledge as a tool and not as a process. Additionally, most of the collaboration and knowledge research is conducted by academics. Lastly, the concepts of collaboration and knowledge creation are viewed separately in organizations and they are studied as separate concepts.

As a practitioner, a difference I have noted between academic theories/literature about knowledge and collaboration and what practitioners and organizational members encounter is that the theories often do not reflect what occurs in organizations. More specifically, the theories often fail to understand how complex organizational change is and they often do not take into account incentives and motivations (individually focused vs. organizationally focused) and how these factors influence what happens in terms of knowledge development, sharing and collaboration.

This researcher put forth recommendations related to better understanding how to develop strong and weak cultures that support knowledge integration, metrics, culture, and empowering organizations to create effective knowledge creation and management programs. Candidates for future research include a larger stratified research study,
understanding technology and its impact on collaboration and knowledge creation, research examining barriers to collaboration, and develop a better understanding of how senior management can support collaboration and knowledge creation.

Individuals may behave in their self-interest to develop ways to obtain knowledge to accomplish immediate tasks and not develop organizational knowledge. Leadership, incentives, and metrics support a strong culture of knowledge integration. Preexisting team cohesion or mutually identified interests in the collaboration outcomes drove collaboration in an unsupported environment. Very little evidence was found that the participant’s behaviors promoted long term knowledge discoveries that could be more broadly transferred to others within their organization. Future research efforts can help provide organizations with a better understanding of the impact that collaboration has on knowledge creation. Organizations might be more efficient and developing a competitive advantage by emphasizing collaboration and knowledge creation initiatives and research. This research study shows that there is value in pursuing research in this area.
Appendix

Appendix A: Participation Consent/Transcription Security

Participation Consent

Consent and permission to interview participants will be obtained from the organization (where needed). The researcher will sign any organizational non-disclosure form (modified to allow the transcription of interviews and not to divulge the identity of the organization or participant in the research documents) that the organization may require. A detailed understanding of the research process and how the data will be handled will be provided to the organization and the participants. Consent to participate form will be sent to each participant and a copy will be provided to the organization (if necessary). Participation consent may be given verbally during the interview and will be recorded in the transcript. No data will be collected without obtaining a signed consent form or recorded acknowledgement of consent. Permission will be obtained from the organization and the participant to record the interviews (where necessary).

Participant Confidentiality and Transcription Security

The identity of the participants and their organizations will be kept strictly confidential. The organizations will be aware of the participant’s involvement in the research but will not be privy to the responses. The identity of the participants will be protected and not disclosed in the dissertation or analysis documents. All identifying information will be removed from the recordings and transcripts.

The transcriber will be required to sign a confidentiality agreement. The following protocol will be used to protect the data during the transcription process:
• Each participant will be assigned a number that corresponds to a key (that is known only to the researcher which corresponds to their identity/organization).

• The transcriber will keep all confidential information in password-protected files.

• The transcriber will sign a non-disclosure form and confidentiality agreement.

• The transcriber will delete all files once the researcher successfully receives them.

• The researcher will destroy the original recordings, transcriptions, participant key, and related files all files after the transcription after the analysis has been completed.
Appendix B: Participant Consent Form

University of Pennsylvania
INFORMED CONSENT FORM
HOW DOES AN ORGANIZATION USE
COLLABORATION TO CREATE KNOWLEDGE?

Title of the Research Study: How does an organization use collaboration to create knowledge?
Protocol Number:
Principal Investigator: Mark Ezell
Phone:
E-mail:
Emergency Contact: Same as principal investigator

Thank you for agreeing to be interviewed for this research study. We appreciate your making the time to provide us with your thoughts and reactions.

Purpose: The goal of the study is to develop a better understanding of how organizations build organizational knowledge through collaboration.

Permission to Record the Interview: We are also asking for your permission to audio record this interview. If you give us your permission to audio record this session, we will have a transcript made of your interview from the recording. Transcripts of the interviews will enable us to comprehensively analyze the interviews for similarities, differences and themes. When we send the recording for transcription, your name will not be associated with the transcription; to protect your privacy, we will have a code number associated with each recording. The transcripts will also be identified by a code number, rather than a name. If you do not want your interview recorded, that is fine. We would still like to interview you, and the researcher interviewing you will take notes during the interview. As with the transcript, your name will not appear on the interviewer’s notes.

Confidentiality: Everything you say during the interview will be kept strictly confidential. The only people who will have access to the recordings and the transcripts are the main researcher (Mark Ezell) and the supervisor of this dissertation (Dana Kaminstein, Ph.D.). The results of this research study will be reported in a doctoral dissertation and may be used in reports, presentations and publications, but at no time will you be identified. In order to maintain confidentiality of your records, the only document linking your identity to the recordings or transcripts will be kept in a password-protected file on a computer belonging to Mark Ezell that is not connected to the internet. If we use quotes from the interviews, we will remove any part of the quote that could identify the person who made it, and we will sufficiently disguise quotes so that they cannot be associated with the person who made the comment.

Risks: There are no known risks from taking part in this study, but in any research, there is some small possibility that you may be subject to risks that have not yet been identified.

Benefits:
There are a number of possible benefits from participating in this study. First, by participating in the interview you may become aware of things that you have gained or learned from participating in the study to understand how collaboration impacts knowledge creation in an organization. Secondly, by providing your thoughts, reactions and learning’s you will be helping to develop a better understanding of how collaboration impacts knowledge creation and innovation within an organization.

In any research study it is possible that you will not receive any benefits from participating.

Withdrawal Privilege:
Participation in this research study is completely voluntary. If you decide at any point that you want to withdraw from this study, you may do so without any consequences.

Voluntary Consent:
If you have any questions about this consent form, your participation in this research study, or other questions, you can contact Mark Ezell. He will be glad to answer any of your questions.

If you have questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact Office of Regulatory Affairs at the University of Pennsylvania by calling (215) 898-2614.

By signing this form below you provide your consent to be interviewed. Keep in mind that your participation is totally voluntary.

By signing this form below you provide your consent to: (please write an X in your preferred option)

_______ be interviewed and to have the interview recorded.

_______ be interviewed and NOT have the interview recorded.

Participant's Signature   Participant's Printed Name   Date
Appendix C: Data Collection Instruments (Interview Questions)

**Question 1:** In your role within the organization, what are the typical issues that you face?

**Follow-up:** If you are faced with an issue you want to understand better what resources do you consult?

**Question 2:** What does the term “organizational knowledge” mean to you?

**Definition:** Individual knowledge paired with that of other individuals in an organization. Organizational knowledge is the type of company asset to which no value can be named. When individuals pool their knowledge within an organization, that knowledge can give the organization advantages over others in the same field.

**Follow-up:** How do you see knowledge used in your organization?

**Question 3:** Can you describe the resources that you normally consult when facing a business issue?

**Question 4:** What organizational systems exist to enable knowledge distribution and creation in your organization?

**Definition:** (Organizational systems would be databases, procedures, etc.)

**Follow-up:** What additional systems would you like to see in your organization?

**Question 5:** How are problems that span functions (i.e between marketing and finance) handled within your organization?

**Follow-up:** What steps do you normally follow to solve a cross functional issue? Please provide an example.
(For example, what would be the protocol around how complex unstructured problems and how they are solved in organizations?) (If describe data, how do you convert data to a usable form?)

**Ask only if needed:** What would be role of various functions that involve collaboration, data, information, and knowledge to help solve these business challenges?

**Question 6:** Is collaboration used to generate knowledge within the organization?

**Follow-up:** If so how? If not, what are the barriers?

**Question 7:** What does a successful collaboration in your organization look like?

**Follow-up:** What metrics are used to measure the success?

**Question 8:** How does your organization use social media?

**Follow-up:** Are social collaborative tools used on an informal and formal basis (I will define-Only if they ask).

**Follow-up:** Does the organization have any plans for social media collaboration?

**Follow-up:** Are there organizational cultural barriers preventing its adoption?

**Question 9:** What does Big Data mean to you?

**Follow up:** Big data refers to predictive analytics or other analytics to help with problem solving using data to analyze large data output from an organization to harness information and produce useful insights.

With this definition in mind how does this apply to your organization?

**Follow-up:** What is the role that data plays in the decision-making processes of the organization?

**Follow-up:** How do teams in your organization use data?

**Question 10:** How do people in the organization collaborate to make decisions?
Follow-up: Do you think teams work effectively to come up with new ideas and make decisions?

**Question 11:** What are the differences you see with colleagues who use data to make decisions or create new ideas vs. those who do not use data as much to aid their decisions or create new ideas?

**Final Question:** Is there anything else that I haven’t asked or that you think is relevant to add to the discussion?
References


