SAVE THAT THOUGHT: A CASE STUDY OF HOW KNOWLEDGE IS
TRANSFERRED BETWEEN BABY BOOMERS AND GENERATION-X
AEROSPACE ENGINEERS

BY

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ABSTRACT

The current American workforce is at a crossroads due to the number of Baby Boomers either retiring or on the cusp of retirement. For many organizations, this cohort possesses knowledge and experiences that can be lost if this knowledge is not transferred before their departure from the organization. This ability to share knowledge is increasingly recognized both as a valuable asset for organizations and as a modern-day challenge for leaders. The purpose of this research was to explore the process of organizational knowledge sharing resulting from the Baby Boomers’ retirement. Using case study methodology and a single-stage sampling procedure, twelve participants were recruited to participate, and research questions were designed, to address how two generations of aerospace engineers describe their experiences with knowledge transfer and the strategies used to support such a transfer. Sources of information for this study were face-to-face, semi-structured interviews, organizational documents, and artifacts. Data were analyzed, generating codes and conceptual categories that eventually led to the emergence of the three themes of organizational knowledge transfer, promote knowledge sharing, and tacit and explicit knowledge. An analysis of these three themes resulted in three specific recommendations for action which were: (a) turning tacit knowledge into explicit knowledge, (b) creating knowledge sharing activities, and (c) developing purposeful leadership. Future researchers could explore management views of knowledge sharing and the impact on the organization.
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CHAPTER 1: INTRODUCTION TO THE STUDY

As the Baby Boomer cohort begins to retire from the workforce, the potential loss of their institutional knowledge will impact intellectual capital, leaving organizations vulnerable and devoid of critical, tacit knowledge. This impact by Baby Boomers on organizations has been the focus of several studies. In a work that explored how individual factors impacted the sharing of knowledge, Brcic and Mihelic (2015) found that this cohort is shifting the structure of today’s work environment and threatening the competitive advantage of organizations. Additionally, Rothman (2016) in his work on generational distinctions, identified the Baby Boomers as one of five generational cohorts presently in the workforce, along with the Silent Generation, Generation X, Generation Y, and Generation Z. In an article that explored generational shifts in the workforce, Colby and Ortman (2014) stated that within the next ten years, according to the U.S. Census Bureau, twenty percent of the total U.S. population will be over the age of 65 and eligible for retirement.

With Baby Boomers leaving the workplace for retirement, organizations can benefit by capturing this lost knowledge and maximizing the value of this asset. In researching Baby Boomers and retirement, Kumar and Mohindra (2015) stated that the exodus of this generation has begun and their deep knowledge needs to be captured before their departure. The findings from this study will be used to explore the impacts of the Baby Boomers’ retirement on organizational knowledge sharing. By understanding these impacts, organizational leaders may be able to develop knowledge sharing programs to mitigate knowledge loss.
Study Background/Foundation

Knowledge is increasingly recognized both as a valuable asset for organizations and as a modern-day challenge for leaders. This ability has been identified as the crux to turning individual knowledge into organizational knowledge. In an article on the ability to share knowledge, Brcic and Mihelic (2015) found that once knowledge is shared, it becomes a critical resource for the organization and creates a competitive advantage. One way to maintain and grow an organization’s knowledge has been through the emergence of the field of knowledge management (herein referred to as KM).

KM began as the creation of strategies and processes to identify, create, safeguard, and use an organization’s information and people, who are also known as knowledge assets. Kothari, Hovanec, Hastie and Sibbald (2011) summarized effective KM strategies including training sessions, communications, and communities of practice. Furthermore, since its inception almost twenty-five years ago, the field of KM has been defined as the process of creating, using, sharing, and managing organizational knowledge (Kothari et al., 2011). Based on this definition, the field of KM presents an opportunity to preserve human knowledge assets in light of the looming retirement predictions.

To bridge knowledge and create added value for an organization, knowledge must be shared among employees. In a seminal book on knowledge exchange, Nonaka and Takeuchi (1995) stated that knowledge is a primary source of economic value for an organization. Sharing knowledge provides the opportunity to create knowledge and to generate more ideas, which have the potential to create innovation, competitive advantage, and corporate success. In an article investigating the impact of knowledge
sharing, Wang, Noe, and Wang (2014), confirmed that knowledge sharing contributes to an organization’s intellectual capital. Companies like Siemens and Xerox have experienced both an increase in sales volume and cost savings due to KM systems (Wang et al., 2014). In the research of Myers (2015) and Sanchez, Sanchez, Collado-Ruiz, and Cebrian-Tarrason (2013), analysts estimated a lack of employees sharing knowledge resulted in a loss of at least $31.5 billion per year by Fortune 500 companies. The ability of people to share knowledge across the organization is one facet of knowledge management.

Several researchers have identified four key dimensions for KM practice: (a) an encouraging culture which creates and shares knowledge, (b) identifying and sharing existing knowledge, (c) experimenting with and creating new knowledge, and (d) recognizing the strategic value of knowledge (Mahmoudsalehi, Moradkhannejad, & Safari, 2012). In research highlighting participative leadership, Mahmoudsalehi et al. (2012) revealed that for an organization to encourage, identify, create, and recognize any strategic knowledge, leaders must be actively involved facilitating these efforts. Accordingly, the design of this study is organized to explore one facet of KM, specifically the ability to identify and share existing knowledge, and the potential impacts on knowledge sharing resulting from the Baby Boomer generation retirement.

**Demographic Shifts**

Retirement is forcing a large-scale shift of the workplace. In an article about the present-day U.S. labor force, Fry (2015) found that many organizations are impacted by this current demographic shift and concluded that the Baby Boomer generation is the largest retiring cohort ever (Fry, 2015; U.S. Census, 2015). In 2011, the first of this
cohort turned 65. In their research on current population reports, Colby and Ortman (2014) theorized that by 2029 the Baby Boomer generation will represent more than 20% of the total U.S. population and as a result, some specific industries are affected. In an article on the global aerospace industry outlook, Deloitte (2017) advanced that the aerospace industry is one of many industries affected by this retiring cohort. Hedden and Sands (2015) identified the difficulties aerospace and defense leaders have about an aging workforce and hiring the best in the field. Despite concerns about the industry being viewed as mature by researchers, in 2014, 1.7% of the aerospace and defense workforce retired, resulting in a postponement of those eligible to retire by almost 40% (Hedden & Sands, 2015). This postponement has afforded organizations a few more years to capture knowledge and bridge any information gaps. However, with Baby Boomers being the largest knowledge base among the current workforce, their retirement has the possibility of affecting an entire organization’s knowledge base (Gibaldi, 2014).

Ignoring an organization’s knowledge base can have broad effects. In an article on converting data into useful knowledge, Hasan and Zhou (2015), concluded that the inattention to identify knowledge loss and broadcast global best practices throughout an organization has the potential to reduce efficiencies in the workplace. The intellectual impact of such a loss could significantly cripple the competitive advantage of an organization (Hasan & Zhou, 2015). According to the Census Bureau, there are more than 75.4 million Baby Boomers (U.S. Census, 2015). This group of people comprises a significant source of labor currently within the workforce, and their retirement will have an impact on the remaining generational cohorts (Gibaldi, 2014). Solutions to bridge both this exit from the workforce and the requisite lost knowledge include retaining these
workers to capture their knowledge through a variety of means including mentoring, sharing, and training. The field of KM has emerged to address the concerns of this knowledge loss.

**Current State of the Field in which the Problem Exists**

Addressing knowledge loss in specific industries has been a topic for some researchers. In an article on closing the knowledge skills gap, Jusko (2013) identified that organizations are beginning to recognize the impact of the Baby Boomer cohort leaving the workplace and stated that these organizations are facing the loss of knowledge from Baby Boomer retirements (Jusko, 2013; Society for Human Resource Management, 2015). While many fields are affected by this cohort retiring, the engineering field in the U.S. is one sector which has experienced a 1.3% decline in employment numbers (Deloitte, 2017). According to the Aerospace Industries Association (2016), the aerospace and defense industry faces both impending retirements, and a shortage of skilled graduates. These shortages of both labor and skill highlight a concern about an absence of senior-level engineers (AIA, 2016).

As aerospace companies struggle to keep up with the hiring gap, the workplace is evolving. No longer are employees content to keep work and personal lives separate. Employees are finding a better balance between their personal and work lives amidst these changing demographics. In an article that discussed these demographic changes within the workplace, Kelly, Elizabeth, Bharat, and Jitendra (2016) proposed there have also been changes in how each generation thinks and what they value. The most-sought after employees value their freedom and know their worth, so they are employed by the company of their choosing and not the organization’s (Deloitte, 2017). This development
is a different relationship than most aerospace companies are used to and is necessary for the success of any knowledge transfer program.

There are regional impacts to these large demographic shifts. Mela (2017) highlighted how the aerospace sector of the Puget Sound region of Washington State is experiencing difficulty attracting workforce talent. In their research on developing future leaders, Hagemann and Stroope (2013) described that because of the looming Baby Boomer retirement, at the rate of one every eight seconds, the workforce is projected to experience a shortage of critical knowledge in the aerospace sector (Freaner, 2015).

Knowledge sharing plays a fundamental role in both the organization and the leader’s ability to maintain a competitive advantage and generate new ideas. As organizations continue to recognize the value of knowledge, leaders will be required to identify, develop, and capture knowledge in order maintain their competitive advantage (Kumar & Mohindra, 2015). Therefore, in today’s knowledge-based economy, the effective use of a KM strategy could be the answer to capturing that knowledge.

**Deficiencies in the Evidence**

Many factors can influence knowledge sharing. One such factor is why people behave in a certain manner, and how their behavior affects their attitude towards knowledge sharing. In an article on leaders and their aspirations to identify and capture critical knowledge, Ragab and Arisha (2013) uncovered the growing number of publications and research which focused on the managerial and social issues within KM. Ernst & Young conducted a survey of 431 U.S.A. and European corporations, which determined the biggest challenge to organizations was the changing behaviors of employees (Ragab & Arisha, 2013). Researchers within this stream of the literature
uncovered the tendency for employees to hoard knowledge or resist sharing specific knowledge, which may inadvertently affect an organization’s ability to be competitive (Ragab & Arisha, 2013).

Similarly, Firestone (2008) determined a lack of agreement among researchers about what KM is and subsequently, disagreement over its effects, failures, and future for any organization. Firestone (2008) highlighted a study done by Guerino in 2007 where 18 executives communicated some common beliefs surrounding KM. This communication resulted in a general lack of agreement in the definition of KM, with executives being more concerned about information management rather than managing KM assets. Other concerns were raised with team members using KM techniques but either calling it by another name or performing non-KM work and calling it KM. This misunderstanding is problematic because an individual may not know what KM is, nor how to capture, share, and distinguish KM from non-KM. The non-agreement of a definition could pose a challenge for the organization to create a KM initiative which everyone understands and is willing to participate in.

Upon examining the KM literature, four distinct areas were uncovered. Those areas were: (a) knowledge deficiency, (b) knowledge improvement, (c) knowledge sharing, and (d) knowledge evaluation. Within the area of knowledge deficiency, Benson and Brown (2011) uncovered that the members of GenX were less committed to the job, compared to the Baby Boomer generation. Furthermore, Durst and Wilhelm (2012) revealed gaps in the literature related to motivation, commitment, and job satisfaction in retaining the younger generations. In addition to motivational issues, other researchers discovered that a lack of succession planning could have adverse effects on the
organization (Durst & Wilhelm, 2012). These researchers gave rise to several issues surrounding these two generational groups. Specifically, these researchers wanted to confirm the way that leaders are preparing themselves for the Baby Boomer retirement and the subsequent loss of long-term institutional knowledge. Finally, these researchers inquired how leaders can better understand and capture knowledge while managing their shrinking talent pool and the potential skills shortage.

Knowledge improvement offers a better comprehension about generational diversity. Legas and Sims (2011) uncovered a gap related to stereotypes between Baby Boomers and GenXers and the limitations that stereotyping could impose on an organization. In addition to stereotyping, Turner, Biros, and Moseley (2009) uncovered the fact that fewer people are entering the workforce. Consequently, Turner et al. (2009) noted concerns that arose from examining these gaps. Specifically, these researchers sought to understand if leaders appreciated the different motivations of the five generations currently in the workforce. Secondly, these researchers examined the impact be on an organization with fewer people in the workforce. Lastly, these researchers sought to investigate what types of training, mentoring, and knowledge sharing activities are needed for the different generations.

While the goal of the study was to examine the process knowledge sharing, gaps in the literature emerged regarding what prohibited it. In an article to summarize previous studies from the literature that explored specific knowledge management tools, Kothari et al. (2011) disclosed gaps in KM strategies which could prevent knowledge sharing. In a similar article, Lotti Oliva (2014) uncovered other barriers including obstacles in transferring knowledge. These studies led to a couple of concerns over the prevention of
knowledge loss, including examining if there are proven methods to implement KM strategies, and if organizations have realized sharing knowledge is a voluntary action.

Knowledge evaluation has become a common catchphrase in the existing research literature on KM. Researchers within this theme uncovered a positive correlation between transformational leadership and organizational learning (Noruzy, Dalfard, Azhdari, Nazari-Shirkouhi, & Rezazadeh, 2013). Their research led to a couple of propositions, namely if organizational learning can be improved through transformational leadership and if a transformational leader has an effect on KM. The research reviewed in the four areas above revealed several concerns including implications for leaders, their ability to effectively manage their shrinking workforce and capture critical tacit knowledge; the impact KM systems have of the generations working together; the voluntary nature of sharing knowledge; and, lastly, the influence the leader has on the KM process.

As the four areas of KM were reviewed, two overarching deficiencies were uncovered in the literature. These deficiencies included human resistance to share knowledge and the degree of leadership’s involvement with KM sharing initiatives. In an analysis of KM interventions, Firestone (2008) illustrated that further exploration and comprehension of these deficiencies highlighted in what way improved communication, documented content, and improved access to information and data could be enhanced by a comprehensive KM initiative. KM is an organizational asset that when impacted negatively could result in the organization losing both their market and competitive advantage.
Problem Statement

Capturing knowledge requires more than a leadership commitment. Employees must also want to share their knowledge. In an article on the impact when an older expert leaves the organization, Carmel, Yoong, and Patel (2013) described the various concepts of this lost knowledge. The identified knowledge gap, which is the direct result of the Baby Boomer cohort retiring, should compel leaders to acknowledge the value of such a knowledge loss, identify what knowledge needs capturing, identify who should do the capturing, and how this knowledge will enable a competitive advantage (Carmel, Yoong, & Patel, 2013). Therefore, the general problem is that current demographic shifts are impacting U.S. organizations’ intellectual capital.

Some key industries have not addressed the loss of critical tacit knowledge which will impact them when the large predicted numbers of Baby Boomers retire. The Society for Human Resource Management (2015) identified several industries affected by knowledge loss, including manufacturing, healthcare, engineering, government, mining, non-profit, financial institutions, and utilities. In research designed to enhance the transfer of knowledge from Baby Boomers to Generation X aerospace engineers, McNichols (2010) exposed two areas likely to be hard hit by the Baby Boomer retirement are the aerospace industry and manufacturing sectors.

Leaders have not addressed the potential intellectual impact resulting from the critical tacit knowledge lost due to the Baby Boomers’ retirement. While this loss is impacting many industries, the specific problem addressed in this study is to examine the knowledge loss and the process of knowledge sharing within the aerospace sector, specifically between two engineering cohorts, Baby Boomers and GenX, at an aerospace
organization in the Puget Sound region of Washington State. By identifying this impact, leaders may be able to develop knowledge sharing programs to mitigate lost knowledge.

**Purpose of the Study**

The purpose of this qualitative research study was to explore the process of organizational knowledge sharing as impacted by the Baby Boomers’ retirement, through the sharing of knowledge between Baby Boomers and GenX aerospace engineers. By exploring these processes, the organization being studied may gain a perspective of how knowledge is shared between Baby Boomers and GenX aerospace engineers and how to explore the process of organizational knowledge sharing. The data gathered can assist leaders in, their understanding of knowledge sharing, the difficulties in extracting knowledge, its criticality to the organization’s competitiveness, and the potential knowledge gap if nothing is done. This qualitative study includes an interview of aerospace engineers working in the Puget Sound region of Washington State.

**Research Questions**

The focus of this study was to examine the process of organizational knowledge sharing between Baby Boomers and GenX aerospace engineers. The results of this study will be useful to aerospace leaders in their quest to retain knowledge. Therefore, the research questions which drive this study are:

1. How do aerospace engineers describe their experience of knowledge transfer from Baby Boomers to GenX aerospace engineers?
2. What is the knowledge transfer process between Baby Boomers to GenX aerospace engineers?
3. What types of strategies support knowledge transfer from Baby Boomers to GenX aerospace engineers?

Methodology Overview

The methodology for this research was the case study method of a pre-determined aerospace engineering organization in the Puget Sound region of Washington State to understand the process of organizational knowledge sharing. Case study research is the preferred method when the research questions ask what or how or why; the person conducting research has little control over behavioral events, and the focus of the research is not historical, but rather contemporary (Yin, 2014). Moreover, the case study method’s data collection, typically in the form of semi-structured interviews, is bound by time and activity (Creswell, 2014; Merriam & Tisdell, 2016; Patton, 2015).

The primary methods for data collection for this study consisted of face-to-face, semi-structured interviews, and document analysis of field notes and artifacts from the organization. The interviews were conducted with two generational cohorts: Baby Boomer and GenX engineers. The interview questions and responses received were used to investigate knowledge sharing between these two generational cohorts.

This design of this case study helps to develop a deeper understanding of how knowledge is shared among Baby Boomers and GenX engineers, and the process of achieving knowledge sharing. This study was bound by a specific period in time, namely Fall 2017, and the data collection, and document analysis including field notes and artifacts from the organization in this study, took place via semi-structured interviews.

In conducting a qualitative case study, a variety of qualitative data gathering methods were used to confirm that the description and analysis of the case study were
both rich and multi-perspective. Denzin and Lincoln (2005) concluded that qualitative research consists of a set of interpretive materials including field notes, interviews, recordings, photographs, conversations, and memos. This view is also corroborated by Yin (2014), who conjectured that data collection from multiple sources, including interviews, historical artifacts, and related journal articles, creates a triangulation technique validating multiple paradigms.

**Study Limitations**

Limitations include the sample size, the potential for researcher bias, and data being limited to open-ended interviews, and document analysis including field notes and artifacts from the organization in this study. The research was conducted within a limited time frame of the Fall of 2017. Because of the voluntary nature of participant selection, there may be usable information not shared by those employees who chose not to participate. Lastly, honest responses from participants were counted on, and failure to respond honestly could unknowingly skew the data. One way to mitigate dishonesty is through triangulation, using multiple sources to verify responses are accurate by cross-checking information, and conducting follow-up interviews (Merriam & Tisdell, 2016). Another way to mitigate dishonesty is a researcher’s position or reflexivity, which includes how a researcher affects and is affected by, the research process (Merriam & Tisdell).

**Definitions of Key Terms**

The following is a list of key terms and definitions necessary to understand knowledge management in the specific context of this dissertation. Each term includes a research citation for easy reference.
**Baby Boomer.** A Baby Boomer is a person born between 1947 and 1964 (Legas & Sims, 2011; Rothman, 2016).

**Brain Drain.** Brain drain is the departure of educated or highly qualified professional people from one country, economic sector, or field (Goga & Ilie, 2017).

**Competitive Advantage.** A competitive advantage is any organizational factor that makes one organization better than another in the customers’ minds, including, but not limited to, intellectual property, location, products, customer experience, and operational excellence (Amadeo, 2017).

**Culture.** Culture is the accumulated shared learnings of a group, including a system of beliefs, expectations, shared history, and social customs which result in behavior (Schein & Schein, 2017).

**Explicit Knowledge.** Explicit knowledge is knowledge which is easily communicated and available to all, using books, records, and oral and visual materials (Bennet & Bennet, 2008).

**Generation.** A generation is an identifiable group that shares birth years and significant life events (Hennekam, 2016).

**Generation-X.** A Generation-X (or GenX) is a person born between 1965 and 1980 (Legas & Sims, 2011; Rothman, 2016).


**Generation-Z.** A Generation-Z is a person born between 1996 and 2010 (Rothman, 2016)
**Information Management.** Information management is the collection, retrieval, and management of information from several sources, including the subsequent distribution of that information to one or more audiences (Świgoń, 2017).

**Knowledge Management.** Knowledge management is the processes, strategies, and practices used by organizations to identify, share, retain, safeguard, and transfer knowledge (Kothari et al., 2011; Mahmoudsalehi et al., 2012).

**Knowledge Sharing.** Knowledge sharing is the action (or behavior) of disseminating relevant information to other employees within the organization (Henttonen, Kianto, & Ritala, 2016).

**Knowledge Transfer.** Knowledge transfer is an activity through which knowledge (namely, skills, information, and expertise) is communicated and exchanged among members of an organization (Bell, van Waveren, & Steyn, 2016). These organizations may also include communities of practice groups that can enhance the sharing of knowledge between and within the organization (Gemünden, 2015; Wang, 2015).

**Silent Generation.** A Silent (or Veteran) is a person born between 1925 and 1946 (Legas & Sims, 2011; Rothman, 2016).

**Tacit Knowledge.** Tacit knowledge is deeply embedded in one’s consciousness and not easily expressed (Bennet & Bennet, 2008).

**Chapter Summary**

This chapter established the study background, gaps in the evidence, the problem statement, the purpose of this study, and the research questions. It also identified the problem facing leaders, that is it their responsibility to prevent the intellectual impact resulting from the critical tacit knowledge loss due to the Baby Boomers’ retirement. By
identifying this impact, leaders may be able to develop knowledge sharing programs to mitigate lost knowledge. The purpose of this qualitative study was to explore the process of organizational knowledge sharing as impacted by the Baby Boomers’ retirement through the sharing of knowledge between Baby Boomers and GenX aerospace engineers at an aerospace organization in the Puget Sound region of Washington State. The focus of the study concentrated on examining the motivating factors and process of organizational knowledge sharing.

The literature review in Chapter 2 summarizes the field of KM, including the topic of KM discussed in more detail, the generations in the workplace, and the theoretical foundations upon which this study was based. Moreover, four areas of KM will be explored in greater detail: (a) knowledge deficiency, (b) knowledge improvement, (c) knowledge sharing, and (d) knowledge evaluation. These areas were examined from the viewpoint of mitigating knowledge loss, impacts to industry, gaps identified, and leadership responses to knowledge sharing.
CHAPTER 2: LITERATURE REVIEW

The purpose of this qualitative study was to explore the process of achieving organizational knowledge sharing, as impacted by the Baby Boomers’ retirement, through the sharing of knowledge between Baby Boomers and GenX aerospace engineers. The specific focus concentrated on examining the motivating factors and the process of organizational knowledge sharing. To accomplish this purpose, Chapter 2 provides a review of the literature covering several theories and concepts related to KM.

The literature review for this study will begin with current demographic shifts and the overall topic of the field of KM, the generations in the workplace, and the relevant theoretical foundations. In addition, four areas of KM will be explored in more detail: (a) knowledge deficiency, (b) knowledge improvement, (c) knowledge sharing, and (d) knowledge evaluation, with a focus on mitigating knowledge loss, industry impacts, gaps identified, and leadership responses to KM. The highlighted research articles in this chapter will describe the constructs which give relevance and bearing to the research being done. Each source of evidence in the literature will offer credibility to the problem of lost knowledge exacerbated by the looming Baby Boomer retirement and its impact on U.S. organizations’ intellectual capital.

**Introduction to the Topic of Knowledge Management**

The field of KM provided a lens through which to view the issue of the intellectual impact of Baby Boomers leaving the workforce. In an article extending the analysis of KM to growth management, Laihonen, Lönnqvist, and Metsälä (2015) stated that the organization must have the necessary knowledge resources to enable growth. The literature surrounding KM empowered leaders with mental models to be followed,
including business intelligence, intellectual capital management, and knowledge management (Laihonen et al., 2015). The area of KM emerged almost twenty-five years ago, and it is defined as the process of creating, using, sharing, and managing organizational knowledge (Kothari, Hovanec, Hastie, & Sibbald, 2011). In research related to competitive advantage, Lin and Joe (2012) discovered that a lack of sharing could weaken competitiveness and organizational effectiveness. Proponents of KM support that the best use of knowledge has the potential of obtaining a competitive advantage (Kothari et al., 2011).

Extracting knowledge involves turning tacit knowledge into explicit knowledge. In an article on assuring the optimal efficiency of knowledge transfer, Pitra and Zauskova (2014) discovered how knowledge is considered an intangible item yet creates an understanding of a particular subject or event. Knowledge is then acquired through evaluation and organization of information (Pitra & Zauskova, 2014). There are two types of knowledge: tacit and explicit. Kabir (2013) on the understanding of tacit knowledge, he put forth that tacit knowledge is a key concept in organizational KM and is that knowledge which is subjective, internalized, and informal (Kabir, 2013).

Additionally, in a study on capturing tacit knowledge, Prasarnphanich, Janz, and Patel (2016) corroborated this knowledge is recognized as the accumulation of years of on-the-job experience knowledge and is often difficult to articulate but valuable. Explicit knowledge is the opposite of implicit knowledge. Specifically, explicit knowledge is knowledge which is easily communicated or transmitted, and available to all in various formats including books and records, oral and visual materials (Prasarnphanich et al., 2016). With the Baby Boomer generation approaching retirement, coupled with its deeply
embedded knowledge, the challenge for leaders will be to turn their tacit knowledge into explicit (or expressed) knowledge (Prasarnphanich et al., 2016).

The key to KM sharing is to extract tacit knowledge. KM sharing initiatives can take many forms, such as mentors and communities of practice. In an article on understanding the role tacit knowledge plays in organizational learning, Bennet and Bennet (2008) concluded knowledge sharing venues which have succeeded in the past included communities of practice, mentors, and learning programs. KM is a system which integrates people and processes to increase performance and has become increasingly more important as organizations realize the value of their knowledge assets and the influence these assets have upon the ability to innovate and respond to the changing economy (Al-omari, Al-shaki, Ahmad, & Ahmed, 2014). Examining the generational cohorts currently in the workplace lends further information and insight into the challenges found in implementing a KM system, including understanding their differences, bridging communication gaps, and capturing knowledge (Kelly, Elizabeth, Bharat, & Jitendra, 2016).

**The Generations and Knowledge Management**

Currently, there are five generational cohorts working together. Researchers have labelled them as Silents, Baby Boomers, Generation-X, Generation-Y, and Generation-Z (Hernaus & Poloski Vokic, 2015; Rothman, 2016; Sanaei, Javernick-Will, & Chinowsky, 2013). These generations are defined by their years of birth (Legas & Sims, 2011; Rothman, 2016):

a. Silents (born between 1925 and 1946)

b. Baby Boomers (born between 1947 and 1964)
c. Generation-X (born between 1965 and 1980)

d. Generation-Y or Millennials (born between 1981 and 1995)

e. Generation-Z (born between 1996 and 2010)

One of the industries impacted is the aerospace industry. In an article about the aerospace industry, Hagemann and Stroope (2013) stated this industry is predicted to have as much as 60% of its workforce eligible to retire within the next three years. By 2017, 11% of the US population will be over 65 years of age. This percentage increases to 44% by 2030 (Sanaei et al., 2013). Therefore, this identified loss of personnel and knowledge creates the imperative to focus on knowledge sharing by removing any barriers to retain valuable knowledge before any employee leaves the organization forever.

Obstacles highlighted in knowledge sharing, and specific to the aerospace industry include the complex technical nature of engineering knowledge, and the unfavorable organizational culture because of the time required to share knowledge (McNichols, 2010). McNichols’ (2010) research discovered the hidden costs of knowledge transfer notwithstanding the time required for junior engineers to acquire tribal knowledge from more senior engineers, the need for experienced mentors, and the importance of trust and openness for knowledge to be shared. McNichols’ (2010) explored the GenX perspectives and their association to KM strategies between GenX and Baby Boomer aerospace engineers, including the need for experienced mentors and the importance of geographic proximity for successful knowledge transfer to occur.

Leaders can play a significant role in drawing out knowledge to be shared from the different generational cohorts. In an article on motivation and willingness and its
relationship to knowledge sharing, Brcic and Mihelic (2015) stated that knowledge and its capture are a modern-day challenge for leaders with each generation bringing with them different expectations. For instance, when examining satisfaction in the workplace, the Baby Boomer generation values work relationships; however, both GenX and GenY prefer the potential for career growth over relationships (Brcic & Mihelic, 2015). Given these different drivers of motivation, it will be helpful to understand the theories behind the motivation. The next section of this chapter is organized around three leadership theories: The Theory of Reasoned Action; Social Exchange Theory; and Leader-Member Exchange Theory.

**Theoretical Foundations and Knowledge Management**

Three theories have been identified as applicable to the research study. Those theories are The Theory of Reasoned Action, Social Exchange Theory, and Leader-Member Exchange Theory. Each theory is germane to this study in explaining how positive or negative perceptions are related to knowledge sharing between leaders and engineers, how each group’s behaviors have contributed to a knowledge sharing culture among aerospace engineers, and how a positive leader-member relationship has led to a richer knowledge sharing experience. Notwithstanding the challenges facing organizations to ensure successful knowledge sharing among employees, there also exist inter-generational differences. These differences include different communication styles, motivations, and work expectations (Brcic & Mihelic, 2015). The challenges, coupled with the inter-generational differences, highlight the applicability of theories to both the generations and their effect on tacit knowledge sharing.
Examining behaviors provides the opportunity to understand how behavior affects knowledge sharing. In a seminal book on the Theory of Reasoned Action, Fishbein and Ajzen (1975) indicated that an individual’s attitude determines behavioral intent, which in turn determines behavior. This theory states that each behavior is guided by three factors: attitudes, intentions, and behaviors (Turab & Casimir, 2015). McNichols (2010) indicated in what manner communication affected perceptions of the person sharing and receiving the knowledge while Chuang, Chen, and Tsai (2015) posited that the organization performs better with knowledge sharing activities. By understanding how attitudes and relationships between employees affect behavior and encourage knowledge sharing, the Theory of Reasoned Action is a concept that can help clarify both the leader and engineer’s positive or negative perceptions associated with knowledge sharing.

Developing trusting relationships can lead to a willingness to share one’s knowledge. The seminal book on Social Exchange Theory by Blau (1964) indicated that individuals regularly weigh the costs and benefits to themselves before deciding to engage in knowledge sharing (Blau, 1964). When considering McNichols’ (2010) research on the importance of communication and research from Ramanigopal (2012), who explored the failure to share knowledge, a lack of group dynamics, and the tendency of employees to hoard knowledge, Social Exchange Theory could help to explain the ways leaders can create strategies to increase sharing among their employees. Furthermore, Social Exchange Theory could help organizations better understand how to make knowledge sharing rewarding for employees (Krok, 2013). These rewards, weighed against profits and losses, could include helping someone through sharing knowledge, making one’s knowledge available, and helping someone with their struggle to
understand a task (Krok, 2013). Social Exchange Theory contributes to explaining behaviors contributing to knowledge sharing culture among aerospace engineers, and illustrates how knowledge is shared only when it offers benefits to the employee sharing knowledge.

Leaders have the ability to influence how much knowledge employees share. In the seminal book on Leader-Member Exchange (LMX) Theory, Dansereau, Cashman, and Graen (1973) indicated that leaders and followers negotiate their relationship over time. This negotiated relationship is typically different for each follower and leader (Zhao, 2015). Leader-member interactions can provide the employee with personal development, support, higher levels of job satisfaction, and overall connectedness with the organization (Choy, McCormack, & Djurkovic, 2016). Furthermore, Jafari, Rezaeenour, Akhavan, and Fesharaki (2010) revealed the link between the leader and competitive advantage. The Leader-Member Exchange Theory could be beneficial in explaining how a positive leader-member relationship leads to a richer knowledge sharing experience, and how a leader could be instrumental in nurturing knowledge sharing among the generations.

**The Strategic Imperative of a Knowledge Management Initiative**

Prior research has addressed distinct elements which are generally characterized by four themes: knowledge deficiency, knowledge improvement, knowledge sharing, and knowledge evaluation. These four themes, uncovered and introduced earlier in the “Deficiencies in the Evidence” section, are now described in greater detail to highlight the strategic imperative a KM initiative can provide.
Knowledge Deficiency

The aging trend of the workforce has implications for future skills shortages. A better understanding of this trend has strategic implications for the futures of businesses, individuals, and society, as a whole. In an article on the generational gaps found in today’s workplace, Kelly et al. (2016) stated that the GenX cohort values the balance of work and leisure and views itself as an independent generation. In comparison to the Baby Boomer generation, the GenX generation had less commitment to the job, as demonstrated by their willingness to quit (Benson & Brown, 2011). Benson and Brown (2011) raised questions about motivation, commitment, and job satisfaction in retaining the younger generations. A better understanding of these differences could enable a leader’s ability to effectively manage their shrinking workforce.

Sharing knowledge is a requirement to succession planning and the future of the organization. Durst and Wilhelm (2012) complemented Benson and Brown’s (2011) work by concluding that improper succession planning, coupled with ignorance of knowledge attrition, can result in dire consequences to an organization’s financial and intellectual capital. Specifically, these consequences had implications of a future skills shortage and helped to demonstrate the impact on the organization, including difficulties related to succession planning, knowledge retention, and KM strategies (Durst & Wilhelm, 2012). Both Durst and Wilhelm (2012) and Benson and Brown (2011) confirmed the need for leadership to recognize the inherent differences between the generations, and the impact of inadequately planning for knowledge transfer as Baby Boomers exit the workforce. The next sections of this chapter are organized around
examining knowledge improvement and illustrates the relationship between this topic and its connection to the generations.

**Knowledge Improvement**

To promote efficiency, and improve employee communication, organizational leaders must identify strategies that enable the smooth relationships between the multiple generations in the workplace. Legas and Sims (2011) addressed the effects of generational diversity between Baby Boomers and GenXers, and the limitations that stereotyping could impose on an organization. These researchers exposed how a better understanding of generational diversity could be advantageous in increasing both an organization’s competitive advantage and human capital. Stereotyping can lead to a better understanding of the different generations’ identity and perceptions (Lyons, Urick, Kuron, & Schweitzer, 2015). Massingham and Massingham (2014) conducted a five-year quantitative, longitudinal study, reviewing and comparing the potential benefits of KM to develop performance metrics criteria to measure the value of KM. Their findings uncovered the importance of measuring the worth of KM and are valuable to this study by highlighting the need for a management checklist for making leadership decisions.

In conclusion, Turner, Biros, and Moseley (2009) confirmed a growing deficiency of employees entering the workforce because of both age and retirement. A better understanding of the reduced numbers entering the workforce has implications for workforce experience, training, and knowledge transfer to the younger generations. The researchers who are associated with the literature in knowledge improvement highlighted a common core related to knowledge improvement through understanding both generational diversity and the shrinking workforce, and by creating a checklist for
leadership. Knowledge sharing and its impact on the organization are described in the next section of this chapter.

**Knowledge Sharing**

A better understanding of the use of KM within organizations has important implications for knowledge sharing and how to manage the inflows and outflows of knowledge. In an article on enhancing organizational performance by developing corresponding KM strategies, Wang, Wang, and Liang (2014) stated that organizations consider knowledge sharing as a strategic initiative; the voluntary sharing of knowledge is emerging as a more proactive form of knowledge sharing and is more likely to increase an organization’s performance. In addition, advocates of knowledge sharing posited that sharing activities are critical for superior organizational performance (Rehman, Ilyas, & Asghar, 2015). Kothari et al. (2011) exposed gaps in knowledge management strategies which could prevent knowledge sharing. This study could lead to solutions in the prevention of knowledge loss and implementation of continuous learning using KM strategies, including training sessions, communities of practice process mapping, and communication technologies.

Recognizing that obstacles exist in transferring knowledge, Lotti Oliva (2014) explored the importance of highlighting barriers to KM and its implementation. Lotti Oliva illustrated five major barriers to KM. These barriers were: (a) inefficient communication and a deficiency in the areas of (b) employee interest, (c) culture sharing, (d) workforce incentives, and (e) employee competence. These barriers could be damaging to knowledge dissemination, evaluation, and acquisition. The Lotti Oliva (2014) study resulted in the creation of a KM model useful in evaluating the maturity
level of an organization’s KM practices. Lastly, Lotti Oliva (2014) demonstrated the challenges leaders face to both capture knowledge and identify critical knowledge.

A characteristic distinct from the knowledge sharing barriers identified by Lotti Oliva (2014) is career mobility. In an investigation comparing the career movement patterns across the four generations, Lyons et al. (2015) observed differences in both job and organizational mobility within the various generations, noting greater mobility among the younger generations. However, despite this mobility, the diversity of career patterns has not shifted significantly from generation to generation.

The findings of these researchers confirmed increased job and organizational mobility across the generations. Their implications drew attention to the younger generations’ desire for faster-paced upward mobility, coupled with the challenge for HR to satisfy this desire or lose these employees to other organizations that can provide the career mobility for this younger set (Lyons et al., 2015). Their research connected generational differences with KM and highlighted the risks to critical skills facing leaders if they fail to gain a long-term commitment from the younger generation.

The literature on knowledge sharing and mentoring demonstrated a common theme concerning leadership acknowledging challenges in capturing knowledge through open communication and flexible systems. Additionally, Lotti Oliva (2014) uncovered the way barriers to knowledge sharing could damage knowledge dissemination, evaluation, and acquisition. If leaders connected the research findings of Lotti Oliva (2014) to those of Lyons et al. (2015), specifically risk to critical skillset between the generations, they could take action to reap the long-term commitment of the younger generations. Complementary findings reported by Kelly et al. (2016) included appealing
to the generations by cultivating a personal investment with the different generations and making the workplace more flexible. Knowledge can also be transformed to enhance innovation. Instituting best practices of continuous learning, through training sessions, communities of practice process mapping, and communication technologies were proposed by Kothari et al. (2011). Each researcher highlighted in this section raised the challenges of implementing KM across an organization.

Knowledge Evaluation

Existing KM frameworks do not simply propose which KM interventions or evaluations an organization should make. In light of this, organizations have not been able to create a viable link between their business strategy and KM (Basu & Kumar Ray, 2014). Dwivedi, Venkitachalam, Sharif, Al-Karaghouli, and Weerakkody (2011) conducted a qualitative metadata analysis which demonstrated limited evidence in the literature to provide a broad, as opposed to deep, view of KM. From a research perspective, this lack of depth could be indicative of a KM trend in the research.

According to the research of Dwivedi et al. (2011), the majority of KM initiatives were found within the fields of computer science and information systems. Surprisingly, the category of business resulted in 63 studies (or 6% of the 1,043 studies examined). Dwivedi et al. (2011) highlighted that KM should be considered a strategic initiative. Thus, their research has provided guidance towards keywords, research topics, and research methods.

Transformational leaders have the ability to influence and improve knowledge sharing across their organization. In an article on the effects of transformational leadership, Noruzy, Dalfard, Azhdari, Nazari-Shirkouhi, and Rezazadeh (2013) suggested
how this type of leadership has a direct influence on both organizational learning and KM. These researchers conducted a quantitative investigation of how transformational leadership influenced organizational performance, organizational learning, knowledge management, and organizational innovation (Noruzy et al., 2013). Their results suggested a positive correlation between transformational leadership and organizational learning. Furthermore, organizational learning was positively related to KM, innovation, and performance. Their research yielded several contributions to KM including organizational learning improvement through transformational leadership; it showed transformational leadership’s importance to organizational innovation and the resulting positive relationship to KM; and finally, it established a link between transformational leadership and innovation to both organizational learning and KM.

**Attempts to Mitigate Knowledge Loss**

Knowledge sharing should require a champion to lead the initiative. In an article about transformational leadership and change management theories, McKnight (2013) uncovered leadership traits which would benefit knowledge lost due to change. Transformational leaders, with their ability to create, influence, and build organizations to succeed in times of dynamic change and scarce resources, could be used as a catalyst to spur creativity and give the organization a fighting chance to be effective in capturing and harnessing knowledge (McKnight, 2013). Minton-Eversole (2012) revealed the ill-preparedness of American organizations for the predicted brain drain and skills void resulting from the retirement of the older, talented generations. Lerro, Linzalone, and Schiuma (2014) uncovered both the absence of the effectiveness of a usable model for intellectual capital and the difficulty to assess the return on investment.
There are attributes which can either ensure success or failure in a KM initiative. These attributes include: (a) organizational culture, specifically knowledge flowing easier within a decentralized organization; (b) organizational structure, namely a flatter organization expediting knowledge sharing; and (c) managerial factors, including top management participation, recognizing and rewarding knowledge sharing, and creating a culture of teamwork and communication (Ragab & Arisha, 2013). One area in which knowledge sharing could be more effective and mitigate knowledge loss is through purposeful leadership, which could benefit a successful knowledge transfer process and help to address the predicted intellectual impact from retirement within the aerospace sector.

**Industry Impacts**

The loss of critical tacit knowledge is a direct effect of demographic shifts in the workforce. Minton-Eversole (2012) and Turner et al. (2009) exposed the ill-preparedness of U.S. organizations for the predicted brain drain and skills void resulting from the retirement of the older, talented generation. This brain drain could have a direct impact on an organization’s competitive advantage. The fact that the Baby Boomer population is now reaching retirement age is making this issue particularly salient. Effective KM strategies may hold the key to competitive advantage and offer hope to translate knowledge lost into knowledge captured (Donate & de Pablo, 2015).

Accordingly, as the Baby Boomer generation begins to retire and leave the workforce, organizations are beginning to experience the negative relationship between a lack of planning for retaining knowledge and a lack of business continuity (Pena, 2013). Even though machines and their technology remain in the organization (Chui, Manyika,
Miremadi, 2016), Pena (2013) uncovered that organizations lack sufficient transfer programs to stem employee tacit knowledge loss. Thus, organizations that develop and produce knowledge-based services and products have identified knowledge as the elusive element requiring capture (Nooshinfard & Nemati-Anaraki, 2014).

Knowledge sharing continues to be investigated by researchers to determine the best method to extract knowledge. In an article on the success factors of knowledge sharing, Nooshinfard and Nemati-Anaraki (2014) uncovered a lack of investigation into the success factors required for organizational knowledge sharing. In exploring these success factors, Nooshinfard and Nemati-Anaraki theorized such a framework would conceptualize knowledge sharing. However, their proposed framework emphasized the individual, the organization, and the flow of knowledge which passes between the parties.

**Intellectual Impacts on Aerospace**

The intellectual loss as the Baby Boomer generation approaches retirement could impede the intellectual capital of an organization. Ramanigopal (2012) underlined that organizations could begin to explore how KM implementation can fill the knowledge gap affected by such retirements. Highlights of Ramanigopal’s (2012) research, corroborated by Ragab and Arisha (2013), included the failure of employees to share knowledge with one another, the lack of group dynamics, and the tendency of employees to hoard knowledge. The aerospace industry faces three challenges: (a) reduction of resources, (b) knowledge-based reward culture, and (c) a decrease in employees (Ramanigopal, 2012). Furthermore, Ramanigopal addressed the highlights of the challenges through KM implementation strategies, including the following potential solutions: (a) peer networks,
(b) business challenges related to KM, (c) benchmarking, and (d) buy-in from generations.

**Impact on Aerospace Industry**

The future of the aerospace industry is connected to the various ways that leaders could improve current human capital through developing KM competencies. The Puget Sound aerospace sector is on the verge of both a brain drain and a skills void due to the looming Baby Boomer retirement (Johnson, 2016; McNichols, 2010; Minton-Eversole, 2012). As indicated earlier, the Baby Boomer generation comprises the majority of the U.S. workforce (Legas & Sims, 2011). In an article on the trends of retirement, Gibaldi (2014) stated that 83 million Baby Boomers are on the verge of retirement. Given these numbers, the intellectual impact of such a loss could significantly cripple the competitive advantage of an organization (Hasan & Zhou, 2015).

Addressing the need to fill the gaps between current knowledge and required knowledge, specific to the aerospace industry, Jafari et al. (2010) developed a model for planning and establishing a KM strategy. Their research uncovered a lack of clear measures in KM initiatives. This lack affected leaders’ effectiveness to enhance their organization’s competitive advantage. A knowledge strategy is one method to fill the gaps between current knowledge and required knowledge.

Sharing knowledge and encouraging creativity is an important role for the leader. In an article on supportive behaviors by leadership to facilitate knowledge sharing and employee creative problem-solving capacity, Carmeli, Gelbard, and Reiter-Palmon (2013) stated that leaders could help influence employee creativity. As discussed above, while it might be complicated to understand the all the detrimental impacts of knowledge
loss, it is not difficult to imagine that leaders are also impacted. Furthermore, the loss of both staff and knowledge are affected by the type of team leader. The leader’s influence can manifest itself in the form of structure, resources, encouragement, guidance, and direction (Carmeli et al., 2013). Researchers confirmed the improvement of KM learning through transformational leadership; the positive relationship between transformational leadership and KM; the significance of transformational leadership to organizational innovation; and organizational learning and KM connected to transformational leadership and innovation (Noruzy et al., 2013).

Loss of competitive advantage, innovation, and performance were highlighted in the research of Noruzy et al. (2013). This research provided evidence that organizational learning was positively related to KM, innovation, and performance. When knowledge is not shared, there is a lack of developing experience and capability which could result in work not getting done due to knowledge loss (Carmeli et al., 2013). The four themes identified in the current literature, specifically knowledge deficiency, knowledge improvement, knowledge sharing, and knowledge evaluation, encompass two common gaps. These gaps, discussed in more detail below, include human resistance to share knowledge and the direct influence of a leader’s management style.

**Research Approaches**

The approaches that researchers have taken in exploring KM is important to consider. In a study on exploring knowledge transfer methods, McNichols (2010) highlighted that an understanding of the motivators and barriers to sharing knowledge is critical for KM sharing to be successful. Furthermore, if leaders can be provided with effective knowledge transfer methods, such barriers can be lessened (McNichols, 2010).
These barriers explained further below, include communication, hoarding knowledge, and the complexity of knowledge. Legas and Sims (2011) recommended how communication could create KM problems. These KM problems included the work pace becoming faster and faster and the availability of technology (Legas & Sims). These challenges can negatively impact KM sharing initiatives across the generations.

The complex nature of engineering not only discourages knowledge sharing due to the shortage of time, but it can also impede knowledge sharing initiatives. To further complicate this complexity, there was the tendency for employees to hoard knowledge, and falsely believing this will result in job security (McNichols. 2010; Ramanigopal, 2012). Yeo and Marquardt (2013) illustrated that if employees can be encouraged to share knowledge, strategies could be developed to help create a knowledge base. Currently, the literature of Yeo and Marquardt confirmed a lack of recognition to share tacit knowledge.

**Direct Influence of a Leader’s Management Style**

Leadership attributes and behaviors are keys to a successful KM strategy. In addressing the relationship between leadership and knowledge sharing, Raguz and Zekan (2016) emphasized the criticality of leadership style in employee behavior leading to knowledge sharing. In fact, the leader’s style has a direct influence on an employee’s willingness to share knowledge (Jafari et al., 2010). Furthermore, Jafari et al. (2010) confirmed that a strong, open leadership style fosters knowledge sharing. In an article on leadership and KM, Analoui, Doloriert, and Sambrook (2013) stated the importance of leadership is not lost within the KM literature. Two well-known characterizations of leaders dominated the KM literature. They are the transactional and the transformational
leader. The transactional leader exhibits two dimensions: expectations and rewards. This type of a leader takes corrective action when ineffective performance occurs (Analoui et al., 2013). The transformational leader instills individual and team spirit, encourages followers to envision a future state through the use of language and actions, builds confidence, and stimulates enthusiasm (Analoui et al., 2013). This second type of a leader creates new opportunities in a supportive environment, thus encouraging knowledge sharing.

In examining transformational approaches, Kouzes and Posner (2014) helped set the foundation for effective leadership practices which could be translated into a KM framework. Their work presented five practices of exemplary leadership which could prove useful for instilling a knowledge sharing environment. Those five practices were: (a) model the way, (b) inspire a shared vision, (c) challenge established processes, (d) enable others to act, and (e) encourage the heart (Kouzes and Posner, 2014). Specifically, transformational leaders and their desire to share, resulted in mutual improvements, employee satisfaction, and practices to effectively capture knowledge (Han, Seo, Yoon, & Yoon, 2016). The transformational leader, with the right change agents, can influence and guide change through their informal networks (Battilana & Casciaro, 2013).

McNichols (2010) uncovered the hardships revealed in getting employees to share knowledge, and exposed how KM leaders must be visionaries to uncover the hidden cost of knowledge transfer. One of the critical success factors of KM is effective leadership, including managerial planning and action (Mas-Machuca, 2014). The strategic direction taken by leaders in both action and controllable factors is required for any KM initiatives
to be successful (Mas-Machuca, 2014). A failure to recognize KM as a competitive asset by leadership is detrimental to the organization’s future (Wu, Yu, & Spender, 2015).

The importance of a trusting and open culture has been discussed in several research studies, including McNichols (2010), Taylor (2013), and Raguz and Zekan (2016). These researchers documented that when trust is high for employees, these employees will invest time and energy in organizational initiatives, including work engagement and KM sharing among team members. However, these researchers’ results also demonstrated an employee’s unwillingness to share knowledge to protect their position in the organization. Ultimately, employees view knowledge as power and are most likely to share knowledge when trust is high (Raguz & Zekan, 2016). As accountability at the leadership level is required for a KM initiative to be successful (McNichols, 2010), the existing KM literature points out that a lack of leadership positively correlated to a failure of KM initiatives.

**Chapter Summary**

This chapter provided a literature review of KM and identified two gaps in the literature. First, researchers have suggested that the complexity involved in engineering (McNichols, 2010), coupled with a lack of recognition (Yeo & Marquardt, 2013), have led to resistance in sharing both knowledge and establishing knowledge sharing initiatives. Second, leaders’ response to KM sharing, coupled with their leadership style, specifically transactional as opposed to transformational, directly influences the employee’s response to share KM (Jafari et al., 2010). Several reasons for these gaps were presented, including challenges in retaining the younger generations (Durst & Wilhelm, 2012), and stereotypes between the generations (Legas & Sims, 2011).
Information about current demographic shifts, the generations in the workplace, and the theoretical foundations were also clarified. Furthermore, this chapter was organized around four areas of KM: (a) knowledge deficiency, (b) knowledge improvement, (c) knowledge sharing, and (d) knowledge evaluation. These areas were examined from the viewpoint of mitigating knowledge loss, impacts to industry, gaps identified, and leadership responses to KM.

The impact of the impending Baby Boomer retirement on U.S. organizations’ intellectual capital is addressed in the findings by identifying the way the process of knowledge sharing can help leaders increase knowledge production (Nooshinfard & Nemati-Anaraki, 2014). The purpose of this research study has been to explore the potential intellectual impact resulting from the critical tacit knowledge lost due to the Baby Boomers’ retirement. Furthermore, this study was organized around examining knowledge sharing between Baby Boomers and GenX aerospace engineers at an aerospace organization in the Puget Sound region of Washington State.

In Chapter 3, a description of the methodology used in this research study is provided, including data gathering and subsequent analyses. The primary method for research gathering was semi-structured interviews. The secondary source of data consisted of organizational documents, including field notes and artifacts from the organization. Also, Chapter 3 will include the overall research design, the targeted research population, and the process of recruiting participants and ensuring their protection, plus data analysis methods, using a qualitative research methodology. A discussion of limitations and delimitations of the research study completes the chapter.
CHAPTER 3: METHODOLOGY

The reason for selecting a particular methodology should be specifically aligned to the appropriate plan for addressing the research problem. Case study is a type of research design which investigates a complicated social problem with many variables of importance (Merriam & Tisdale, 2016). In a seminal book on case study research, Yin (2014) recommended using a case study methodology when investigating a contemporary phenomenon within its real-life context. This qualitative case study approach, related to knowledge sharing between the Baby Boomer and GenX generations, is adapted from the methodology described by Yin (2014). There are several reasons why the case study research design was chosen. One reason for selecting this research methodology is that case studies are useful when examining a present-day phenomenon wherein the boundaries between the phenomenon and the context may not be apparent (Yin, 2014).

The data in the study involved in-depth, face-to-face interviews, document analysis including field notes, and artifacts from the organization in this study. All of these data sources were used to gain a better understanding of the process of knowledge sharing between the Baby Boomer and GenX generations.

The case study researcher must follow basic protocols including maintaining the chain of evidence and creating a case study database (Yin, 2014). To conduct a valid case study, a researcher must collect significant and comprehensive data, consider alternative perspectives, display sufficient evidence, and write an engaging report for the reader (Yin, 2014). The research must be planned accordingly with the goal of establishing the reliability of the case study.
Consequently, the overall purpose of this study was to better understand two generational cohorts, specifically the Baby Boomer and GenX generations, regarding their experiences related to knowledge sharing. The significance of this study was in the ability of leaders to understand the process by which knowledge is shared, uncover any barriers, and develop a set of guidelines for capturing knowledge, so that knowledge transfer is enhanced, and knowledge gaps are mitigated. The contribution to the field of KM is the opportunity to uncover knowledge sharing processes which will help enable leaders to make better decisions regarding knowledge transfer.

The specific purpose of this study was to explore the process of organizational knowledge sharing between Baby Boomers and GenX aerospace engineers, as impacted by the Baby Boomer retirement. By understanding these processes, organizational leaders may be able to develop a knowledge sharing program to mitigate knowledge loss.

Therefore, the research questions which drive this study are:

1. How do aerospace engineers describe their experience of knowledge transfer from Baby Boomers to GenX aerospace engineers?
2. What is the knowledge transfer process between Baby Boomers to GenX aerospace engineers?
3. What types of strategies enhance knowledge transfer from Baby Boomers to GenX aerospace engineers?

**Research Method**

A qualitative case study research approach is bounded by time and activity through which the data collection will occur (Creswell, 2014; Merriam & Tisdell, 2016; Patton, 2015). The description of the research method should be balanced, thoughtful,
and transparent in tone (Yin, 2014). Furthermore, the reader should know the study was carried out with the utmost care and consideration, thus reducing pitfalls while targeting high-quality results (Yin, 2014).

This study was designed to use semi-structured interview questions, and document analysis of field notes and organizational artifacts, to investigate knowledge sharing between the generations. Likewise, the semi-structured interviews were conducted at a specific moment in time, specifically in the Fall of 2017. Moreover, Yin (2014) highlighted that case study method should also include secondary sources. For this study, secondary sources included an organizational document review comprised of field notes, observations, knowledge transfer plans, and training materials from the organization.

The purpose of the research questions was to uncover the process of knowledge sharing between the two generations and findings from the data could lead to a series of recommendations. Any discovery would be information for managers to use as the Baby Boomers and their intrinsic knowledge leave the workforce. The analysis was used to demonstrate any trends and gaps, and the current state of the organization’s leadership in capturing knowledge. According to Merriam and Tisdell (2016), qualitative methods rely on interviews, text, and observation. Maxwell (2005) discussed that research questions should be guided by practical goals to generate credible results. Additionally, Yin (2014) confirmed the interview to be the most significant source of case study evidence.

**Research Design**

The driving force of this study was to explore the process of organizational knowledge sharing between Baby Boomers and GenX aerospace engineers in light of the
Baby Boomer retirement. This qualitative case study included interviews with aerospace engineers working in the Puget Sound region of Washington State. To answer the three research questions, eight interview questions were derived from the literature review. This case study was a single-case design in that only one organization was examined. Yin (2014) discussed five different rationales for using a case study, including theoretical relevance, unusual occurrence, common case, revelatory case, and a longitudinal case. This study was designed to make use of the common case rationale that is capturing the everyday occurrence of people retiring. By highlighting the processes of knowledge sharing, organizational leaders will have more information about the means by which to mitigate knowledge loss and to provide insights to benefit organizations.

**Instruments**

According to Merriam and Tisdell (2016), the primary instrument for gathering the data is the researcher, who relies both on skill and intuition to find and interpret the data. In conducting a qualitative case study, a variety of qualitative data gathering methods were used to confirm that the description and analysis of the case study are both rich and multi-perspective. Denzin and Lincoln (2005) suggested that qualitative research consists of a set of interpretive materials including field notes, interviews, recordings, photographs, conversations, and memos.

For this study, and before data collection, the Institutional Review Boards at both the organization where the interviews took place and City University of Seattle provided the authorization to proceed. The primary method for data collection was semi-structured interviews. Secondary methods were comprised of document analysis including field notes to record observations and impressions, plus archival artifacts consisting of
documentation describing the background and history of the organization in this study, the contents published at this organization’s website, and the training documentation. Data collection from multiple sources, including interviews, historical artifacts, and related journal articles, is a triangulation technique which is used to validate multiple paradigms (Yin, 2014).

Interview questions were grounded in the literature. Open-ended interview questions were grouped into three categories related to the initial research questions: (a) the experience of engineers with knowledge transfer; (b) the knowledge transfer process; and (c) the strategies used to enhance knowledge transfer between two generational cohorts, specifically Baby Boomers and GenX engineers. After receiving signed informed consent from the participants, the interviews were scheduled and conducted to capture the responses to the questions by all participants involved in the study.

Face-to-face semi-structured interviews, focusing on both general and open-ended questions, were used. Furthermore, the use of a semi-structured interview process was to pursue a fluid rather than a rigid line of inquiry (Yin, 2014). Interview questions were constructed with the objective to completing the interview process within 45 minutes. This process included the required time for setup, introductions, consent, and interview.

The semi-structured interviews took place at a pre-arranged day and time at an agreed-upon location. Data collection should take place in a natural setting in which the participants experience the issue (Creswell, 2014), which for this study, was their work location. In addition, brief handwritten field notes were kept while meeting and talking with the participants. Interviews were recorded with a digital voice recorder and subsequently transcribed using a professional transcription service to ensure the accuracy
of the data and to remove any bias in the transcription process. Upon completion of the interview, each participant was asked to review the transcription and update it as appropriate to ensure data accuracy.

Anonymity was ensured with the use of pseudonyms. The actual identity of the participants was kept confidential. All paper data (including the transcripts, questionnaires, typed records of the interview, interview notes, and informed consent forms) will be held in a secure, locked file cabinet. All digital files (including digital audio/video files, computer discs, any backups of computer discs, and any other storage devices) will be stored on an external drive encrypted and password protected for a period of five (5) years. At the end of that time, all data will be permanently destroyed. The published results of the study will contain data from which no individual participant can be identified.

**Participants**

The target population consisted of individuals working for a major aerospace organization in the Puget Sound region of Washington State. For this case study, two generational cohorts were invited to participate: Generation X (born between 1965 and 1980) and Baby Boomers (born between 1947 and 1964). The participants were over the age of 21 and were purposefully selected, and their participation was voluntary. Lastly, participants were recruited to participate in the study via email from the organization’s contact list.

A single-stage sampling procedure was followed. No stratification of the population was involved. Two-tiered sampling was required for qualitative case studies (Merriam & Tisdell, 2016). The case to be studied was the first tier, specifically
knowledge transfer between the Baby Boomers and GenX engineers at an aerospace organization located in the Puget Sound region of Washington State. The sample size within the case was the second tier, as opposed to interviewing all of the people within the organization. Six employees from each population, namely Baby Boomer and GenX, were interviewed, for a total participant pool of 12 employees. The initial target of this study was 12 interviews unless data saturation emerged first. According to Fusch and Ness (2015), data saturation occurs when three conditions are met: there is no new data, there is no new coding, and there is enough information gathered to replicate the study. The interview questions were structured to ask each participant the same set of questions to reach data saturation.

The interview was conducted in the following manner: (a) arrival to the interview with introductions to one another; (b) introduction of the study including confirming signed consent; (c) the reassurance of anonymity; and (d) discussion of the voluntary nature of participation, including the right to withdraw at any point in time; (e) the interview itself; (f) the asking of further probing questions as required, essentially drawing out more information from the participant; and (g) the conclusion of the interview including any final thoughts from the participant, and thanking the participant for their time.

Data Analysis Methods

Although the Instrument section of this study is distinct from the Data Analysis Methods section, Merriam and Tisdell (2016) theorized that exploring both the Instrument and Data Analysis sections should happen at the same time. This inter-related process will assist in the uncovering of themes. Merriam and Tisdell (2016) also
recommended simultaneous data collection and analysis, which begins with basic
analysis that focuses on the data and reduces the prospect of the researcher being
overwhelmed by the volume of material to be processed (Merriam & Tisdell, 2016).

To augment the process of data analysis, multiple sources of information were
used. These sources included semi-structured interviews, archival document analysis, and
field notes. Through the process of data analysis and the examination of the transcripts,
data were compiled into concepts or themes. Data analysis was determined by the
participants’ responses to the same set of open-ended interview questions. Qualitative
interviews are considered one of the most significant sources of case study evidence (Yin,
2014). As well, Creswell (2014) recommended that qualitative research proceeds hand in
hand with other portions of the study; namely, data collection and the write-up.

Finally, Creswell (2014) emphasized that the text is rich and full of details and
must be sorted and categorized. Data analysis, according to Creswell (2014), is an on-
going process during the research and involves analyzing participant information. These
steps are comprised of: (a) initial reading of the data; (b) coding the data; (c) developing
themes from the data; (d) representing findings in tables, graphs, or figures; and (e)
interpreting the data (Creswell, 2014; Yin, 2014). There were two primary data collection
processes in this study: semi-structured interviews and organizational document reviews,
including field notes, and artifacts from the organization in this study.

**Semi-Structured Interviews**

Recorded interviews were transcribed using a professional transcription service.
The transcripts, or outputs, were carefully reviewed several times to identify
commonalities among the research participants. Data analysis was conducted through an
iterative process, wherein the interviewee responses were coded line by line and
categorized manually, formulating meaning from the themes uncovered from the review
of the transcripts.

The data were studied to evaluate their potential for relevance and categorization,
and to provide direction for further analysis. The codes and themes reflected the views of
the interview participants and were tracked on a spreadsheet. After a category was
identified, abbreviations were assigned to the category. A category was defined as a word
or phrase common among the participants. The transcriptions became the evidence for
justifying the categories created. The codes, which identified common words, sentiments,
situations, and overlap of participants’ responses, were then associated with a conceptual
category. The categories were organized into themes. The codes created boundaries
which assisted in defining the data segments within each code. The coded categories
validated the research questions. After coding the data, themes emerged which were
compared and contrasted for relevance to the literature.

Organizational Document Reviews

Throughout the interview process, note-taking, also known as memoing, was
conducted to observe nonverbal signals. Memoing included but was not limited to, body
language, speech inflection, disposition (or temperament), and the thoughts and hunches
of participants. Merriam and Tisdell (2016) highlighted that field notes are essential to
the study itself and are helpful in moving from the process of data collection to data
analysis. Yin (2014) proposed that documents could be used to validate and corroborate
evidence or information. The process of note-taking began with the interviewed
participants, continued through coding, and was completed with the analysis phase of the
research. Document data analysis also included a combination of archival artifacts which included organizational documents comprised of administrative documents, emails, training documents, correspondence, organizational news articles, and organizational website. The organizational documents were analyzed independently for themes.

**Alignment of Data Collecting Processes**

Once all interviews and documents were analyzed independently, the evolving themes were compared for alignment and examined for any themes/patterns which emerged. Similar to the coding process after the interviews, the organizational documents were coded into conceptual categories. These conceptual categories were classified into themes and were compared with the interview data, with the purpose of uncovering any relationships or similarities. Stake (1995) praised the case study design for its ability to search for patterns to better understand the case.

**Limitations**

Qualitative research traditions are different from quantitative research. Merriam and Tisdell (2016) found that each has fundamentally different assumptions and as such, the standards of qualitative research include validity and reliability, and ensure that research was conducted ethically, producing both effective and trustworthy knowledge using ethical means (Merriam & Tisdell, 2016). Qualitative research intervenes in the participants’ lives, so the ability for them to trust the person conducting research is paramount (Merriam & Tisdell, 2016).

One of the strengths of qualitative research is internal validity. Creswell (2014) recommended the use of different approaches to enhance a researcher’s ability to assess the accuracy of the findings. Internal validity is concerned with the research findings
matching reality (Merriam & Tisdell, 2016). An underlying assumption of qualitative research is that reality is holistic, multi-faceted, and continually changing.

There are several methods to ensure research validity. Those methods include: (a) triangulation through comparison and cross-checking the collected interview collected from people with different perspectives; (b) member checking through soliciting feedback of preliminary findings from some of the interview participants to verify or cross-validate emergent themes; (c) rich, thick descriptions to convey the findings; (d) presentation of negative information which runs counter to the major themes uncovered; (e) clarification of researcher bias through the use of an open and honest narrative; (f) a prolonged period of time in the field; (g) peer review, which has been built into the dissertation process through regular reviews by both the Dissertation Chair and the committee; (h) reflexivity including clarification of assumptions, biases, and dispositions; and (i) the use of an external auditor (Creswell, 2014; Merriam & Tisdell, 2016; Yin, 2014). In this study, internal validity was assessed through triangulation, member checking, peer review, presenting any negative (or counter) themes, and bracketing of assumptions to avoid researcher bias.

Reliability is the degree to which the research findings can be replicated (Merriam & Tisdell, 2016). Despite this potential flaw, instead of discrediting the results, the qualitative researcher should realize the same data can result in numerous interpretations (Merriam & Tisdell, 2016). Therefore, in qualitative research, reliability includes whether or not the findings are consistent with the data collected (Merriam & Tisdell, 2016). Reliability is ensured by following a systematic procedure for both the study and each participant. According to Yin (2014), this procedure can be accomplished by creating as
many operational steps as possible creating an audit trail and by taking the position that someone is observing the process. By outlining the research and being systematic, namely following the same procedure for each participant, another researcher should be able to duplicate a study and arrive at the same findings and conclusions (Merriam & Tisdell, 2016; Yin, 2014).

One limitation of this study included the possibility of incorrectly identifying what needs to be studied in the qualitative phase. This limitation could be mitigated by conducting trial pre-interviews with a few participants. Other limitations included the sample size, the potential for researcher bias, the open-ended interviews, and the time restrictions of collecting the data in the Fall of 2017. Further, because of the voluntary nature of participant selection, there may be useful information not shared from those who chose not to participate. Lastly, honest responses were anticipated, and failure to respond honestly could unknowingly skew the data.

One way to mitigate dishonesty was through triangulation, or multiple sources, to verify responses were accurate. This process is accomplished through cross-checking information and follow-up interviews (Merriam & Tisdell, 2016). Another way to mitigate dishonesty is the researcher’s position or reflexivity, which includes the ways the researcher affected and is affected by, the research process (Merriam & Tisdell, 2016).

Delimitations were those features which defined the boundaries and limited the scope of this study. A few delimitations to this study included the research questions, variables of interest, the selected theoretical perspectives, as opposed to all perspective that could have been selected, and the particular population chosen. The first delimitation
was the choice of the problem itself: How will leaders, at an aerospace organization in the Puget Sound region of Washington State, address the intellectual impact resulting from the critical tacit knowledge lost due to the Baby Boomers’ retirement? This question implied that there were other related problems which could have been chosen. Furthermore, the purpose addressed in this study was to explain the intent of the proposed activities, including the purpose of this qualitative study which was to explore the processes of organizational knowledge sharing as impacted by the Baby Boomers’ retirement, through the sharing of knowledge between Baby Boomers and GenX aerospace engineers.

Delimitations of this study included intentional restrictions placed on the longitudinal scope of this study, specifically interviewing only current employees within the chosen organization, and conducting the interview within a specific moment in time. Although the size of the Baby Boomer cohort is large, the sample size of this study was small. Despite this limited size, in a seminal book on case study and sample size, Yin (2014) stated that when a representative distribution of the population is being studied, a single case study is appropriate when one of the single-case rationale is used. For this study, it was the common case. Other delimitations included participant selection, namely engineers, from one department within the organization situated in the Puget Sound area of Washington State. While the focus of this research was on a single, select group of employees, other occupational categories who are also predicted to be affected by the loss of Baby Boomers may have different KM issues and challenges than those categories identified in this study.
Chapter Summary

This qualitative study made use of a case study approach. The core focus of this study was to explore the process of organizational knowledge sharing between two generational cohorts: Baby Boomers and GenX aerospace engineers. Referring back to Chapters 1 and 2, it was noted that the leadership problem addressed the intellectual impact resulting from the critical tacit knowledge lost due to the Baby Boomers’ retirement. While other researchers have offered conclusions about knowledge sharing, more research is required to address human resistance to share knowledge and leadership’s response to sharing KM.

An examination of the case study method, the research design, and the specific approach to be taken was presented in this chapter. The theoretical foundations of the case study method were reviewed, in addition to the rationale for selecting the case study method. The research questions, research design, researcher role, including the bracketing of assumptions to prevent bias, and participant selection were also described.

This study was organized using semi-structured interviews with a total participation of 12 aerospace engineers, in addition to document analysis including field notes, and artifacts from the organization of focus in this study. The interview questions were asked to identify the means by which knowledge is shared and what leaders are doing to capture knowledge. The process of data analysis was detailed with specific directions for data coding, and the identification of categories from the transcriptions. Also, protection of human participants was discussed, along with limitations and delimitations. The components mentioned above were an integral part of the study methodology.
The analysis of data from the participant interviews and the document analysis resulting from both field notes and artifacts from the organization in this study are described in Chapter 4. The analysis was conducted based on applying the research methods identified in Chapter 3. The research findings from the study were organized into common themes and highlighted participant responses. Insight into knowledge sharing, and the intellectual impact resulting from the knowledge lost due to the Baby Boomers’ retirement, are explored in more detail in the findings.
CHAPTER 4: FINDINGS

The intent of this research was to understand how the process of organizational knowledge sharing has been impacted by the retirement of Baby Boomers through the sharing of knowledge between Baby Boomers and GenX aerospace engineers. The results of the data analyses are presented in this chapter. The design of the research addressed how knowledge was shared between Baby Boomers and GenX aerospace engineers to determine if the current demographic shifts witnessed among U.S. organizations also impacted the organization being studied here. The data collection process was derived from semi-structured interviews and artifact examination. This final narrative provided answers to the following research questions:

1. How do aerospace engineers describe their experience of knowledge transfer from Baby Boomers to GenX aerospace engineers?
2. What is the knowledge transfer process between Baby Boomers to GenX aerospace engineers?
3. What types of strategies support knowledge transfer from Baby Boomers to GenX aerospace engineers?

This chapter begins with an overview of the research methodology, followed by a brief description of the participants. The collective of ideas and impressions offered by the participants and captured in the research journal and memoing process shed light on the nuances of the data and the common themes which emerged during the data analysis phase. The entirety of the data collection and subsequent analyses were conducted with the research purpose to confirm the potential intellectual impact resulting from the critical tacit knowledge lost due to the Baby Boomers’ retirement and, upon identifying this
impact, to provide leaders with information so they may develop knowledge sharing programs to mitigate lost knowledge. The findings are then presented and organized by research question and are a reflection of the perspectives and opinions of the voices of the interviewed participants. Lastly, an examination of organizational artifacts is described. This chapter concludes with a summary of the findings which will frame the discussion presented in Chapter 5.

**Methodology**

Case study is a methodology of first-hand inquiry investigating a present-day phenomenon (Yin, 2014). The intent of this research was to investigate the intellectual impacts of knowledge lost due to the pending Baby Boomer generation retiring; the case study methodology was selected. The results from this qualitative case study involved the examination of codes and themes derived from the interview data. The resulting codes and themes provided answers to the research questions. The data for this study focused on eight interview questions. To answer these questions, the data collection method consisted of semi-structured, open-ended interview questions. In addition to the data collected from the interviews, an analysis of documents including field notes and organizational artifacts was conducted. The organizational artifacts were examined and related to the participants’ responses for cohesiveness.

**Participants**

The target population for this study was two generational cohorts comprised of 12 individuals who currently work for a major aerospace organization in the Puget Sound region of Washington State and self-identified as belonging to either the Baby Boomer (born between 1947 and 1964) or the GenX (born between 1965 and 1980) generation.
All participants were purposefully selected via an email to all team members within the specified organization. The total number of participants for this study was 12: six Baby Boomers and six GenX aerospace engineers. The demographic information is highlighted in Table 4.1. The Baby Boomer participants had almost double the number of combined years’ experience compared to the GenX participants. Baby Boomers had an average of 29.33 years’ experience. The GenX participants had an average of 15.33 years of experience. Of the Baby Boomer participants, 83% stated they would be retiring within the next five years. From the 12 participants interviewed, 17% were GenX women. Six of the 12 participants were Lead Engineers (non-management supervisors of other engineers) for their groups, specifically 66.66% were GenX, and 33.33% were Baby Boomers.

Table 4.1

*Participant Demographic Information*

<table>
<thead>
<tr>
<th>Category</th>
<th>Baby Boomers</th>
<th>GenX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Participants</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Age Range</td>
<td>56 – 59</td>
<td>43 – 52</td>
</tr>
<tr>
<td>Gender</td>
<td>6 Males</td>
<td>4 Males</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Females</td>
</tr>
<tr>
<td>Combined Years of Experience</td>
<td>176</td>
<td>92</td>
</tr>
<tr>
<td>Retiring Within 5 Years</td>
<td>5</td>
<td>None</td>
</tr>
<tr>
<td>Lead Engineers in Groups</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

A single-stage sampling procedure was followed. No stratification of the population was involved. According to Merriam and Tisdell (2016), two-tiered sampling is required for qualitative case studies. In this study, the first tier was the case to be studied, specifically the knowledge transfer process between the Baby Boomers and GenX engineers at an aerospace organization located in the Puget Sound region of
Washington State. The second tier was the sample size within the case, as opposed to interviewing all the people within the organization.

**Data Analysis**

The data analysis process began by conducting line-by-line coding, which led to the identification of preliminary, emergent themes that appeared throughout the interview transcripts. Creswell (2014) defined coding as the process of organizing the data into meaningful segments of information. The interviews were transcribed using Microsoft Word and were studied initially one-by-one, or participant-by-participant, to uncover common words, themes, and patterns. During the interviews, research notes were taken, containing observations of nonverbal behavior, including voice modulations and body language, and supported the coding process. The research notes were used to highlight specific insights and observations made during the interviews which were of value in connecting ideas and supporting the emergent themes.

Upon receiving the transcript from the transcriber, analysis began by studying the transcript. After reviewing the first four transcripts, commonalities emerged from the data to uncover an initial set of common codes. Frequent use of certain words or phrases were used to determine codes and identify patterns. This logic of analyzing the data was used for each subsequent transcript received. Once all the transcripts were received and coded, the individual transcripts were then separated by question and put together into a new Word document reflecting all the participants’ answers to each interview question. This segmentation of data allowed for any new words, themes, or patterns that emerged from each interview question. As predicted, this approach confirmed the overarching themes and patterns which emerged from the data.
Presentation of Findings

The findings from the analysis of the interview transcripts are presented in this section in relation to the three research questions. The data analyzed in this study highlighted three themes related to knowledge sharing. These themes, discussed in more detail below, are organizational knowledge transfer, the promotion of knowledge sharing, and tacit and explicit knowledge. Some of the high-level patterns identified in the data were: (a) a Baby Boomer was not necessarily the person with the most knowledge or experience; (b) the need to document tribal knowledge and/or processes with easy well-published access for all employees arose from the majority; and (c) the need for active encouragement from management to form mentor-mentee relationships to facilitate knowledge transfer.

The interview questions can be found in Appendix B. From the experiences recounted by the participants, Table 4.2 highlights both the themes and the conceptual categories which were used to provide answers to the research questions. Upon the review of the responses, three themes were established, and the coded responses were divided into conceptual categories. With the exception of Interview Question 8, each interview question was affiliated with a specific research question. Interview Question 8 sought out recommendations to improve knowledge transfer across the different generations. Probing questions were asked, where warranted, as a follow-up to the semi-structured interview questions. Investigative questions were also used for clarification purposes. To achieve simplicity and clarity, this next section was divided into uncovered themes and conceptual categories. The participants are referred to only as participant to protect their anonymity. Though each theme is distinct, themes may share some
principles which cross over. These themes correspond to the research questions, and their relationships are explored in further detail in the subsequent chapter.

Table 4.2

*Themes and Conceptual Categories*

<table>
<thead>
<tr>
<th>Themes</th>
<th>Conceptual Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Knowledge Transfer</td>
<td>Knowledge Transfer Experience</td>
</tr>
<tr>
<td></td>
<td>Shared Experiences</td>
</tr>
<tr>
<td></td>
<td>Importance of Mentoring</td>
</tr>
<tr>
<td>Promote Knowledge Sharing</td>
<td>Spend Time Together</td>
</tr>
<tr>
<td></td>
<td>Create Document Repositories</td>
</tr>
<tr>
<td></td>
<td>Communication Methods</td>
</tr>
<tr>
<td></td>
<td>Management Encouragement</td>
</tr>
<tr>
<td>Tacit &amp; Explicit Knowledge</td>
<td>Tribal Knowledge</td>
</tr>
<tr>
<td></td>
<td>Storytelling</td>
</tr>
<tr>
<td></td>
<td>Subject Matter Experts</td>
</tr>
<tr>
<td></td>
<td>Documentation</td>
</tr>
</tbody>
</table>

**Theme: Organizational Knowledge Transfer**

The theme organizational knowledge transfer encompassed the conceptual categories of knowledge transfer, shared experiences, and the importance of mentoring. Participants alluded to the concepts in a direct and straightforward manner through the supporting focused codes. Participants agreed that transferring knowledge was important but not always easily achieved. As one Baby Boomer participant expressed: “When you say knowledge transfer, I don’t think many of us think of it in a structured way, I might write a letter, make a phone call, leave a sign, [and] it is so contextual.” A GenX participant said: “Knowledge comes from a question or what to do.”

**Findings in the category Knowledge Transfer Experience.** Overall, most participants indicated that they did not specifically transfer knowledge from a Baby Boomer to a GenX aerospace engineer but rather to that person who required the knowledge. One Baby Boomer participant said, “Knowledge transfer is to anybody. [For]
the new engineers, I try to tell my experience and how things work.” Another Baby Boomer participant said: “I transfer knowledge to whoever needs knowledge. I think the nuance might be for me to younger generations [or] less experienced people.” According to one GenX participant: “If the issues were related to a specific problem in our standard statement of work, then it would be emails [being sent back and forth].”

In identifying the acquisition of skills, participants largely said a knowledge sharing plan is required to capture the knowledge. One participant said: “Our manager always tells us to write it down and document any new methods.” Another participant said: “[Management] just being supportive … to allow time to go off and document what [team members] are working on.” Another participant said, “We have to keep something in the form of email or documentation or something to keep and share with everybody … Documents saved on the server … make it better for the team.” Another participant said: “There isn’t a good way to pass on new knowledge to our group – we hear about things in meetings.” Upon examination of the organization’s artifacts, a Knowledge Sharing Plan was discovered. This plan is used solely once an employee indicates they are retiring, and is only required to be completed if their immediate supervisor deems it necessary.

Most participants agreed no one can force employees to learn or share their knowledge. One Baby Boomer participant said: “You have to want to learn [and] management [must be] supportive of the development of [learning] and promote knowledge transfer [rather than] force-feeding them.” A Baby Boomer participant said: “The transfer of knowledge will happen by talking with senior people sharing their work. You need a designated time [to share]. This encouragement comes from management.”
While many Baby Boomer participants echoed the need for Baby Boomers to share their knowledge before retiring, the GenX participants believed lost knowledge was not a bad thing. The following statement typifies this sentiment:

Knowledge walking out of the door has not affected me. We have a younger group. Ten years ago we lost a lot of folks, but not recently. I don’t see that it impacted us negatively at all. There is some dead weight, or folks that are in the way … grumpy people.

The GenX comment above is contrasted by a Baby Boomer participant who said:

Each manager should look at their group and who is ready to retire. [Managers] need to make sure Baby Boomers are working and sharing all this knowledge because when the people leave there is a gap. Management needs to plan for the Baby Boomers leaving and get [that knowledge] to someone else.

**Findings in the category Shared Experiences.** Many participants expressed the need to sit close to their teammates for the knowledge transfer to be optimal. One Baby Boomer participant said: “Lots of verbal communication, and we are sitting close together so we can talk. Some team members are outside of this state, [so] we use WebEx for communication.” A GenX participant said: “If they sit close [by], I usually go to [directly to their desk to] visit and have a face-to-face conversation, it is much easier to see the person and their personality.” Another expressed how proximity provides easy access to information with these words, “When I need information, it is sitting all around me on my team. A lot of the knowledge transfer happens in side conversations, not documented, sharing verbally.”

For many participants, while they expressed having good experiences with all of their colleagues, most Baby Boomers commented on their ease to communicate with the generation closest to them in age: The GenX aerospace engineers. One Baby Boomer participant said:
I have had great experiences with all my colleagues, especially the Generation X people. Our parents were probably raised in a similar manner and had similar values, and had similar growing up path to what I had. [Even how we] were taught in school, like math and English, were similar. I have really good experiences with communications and knowledge transfer between Baby Boomers and Generation X. It is the generations that follow that I have more problems with – nothing big, but the younger kids don’t understand us older folks.

One GenX participant explained that he was hired into the organization with a Baby Boomer cohort, and even though he associates himself with the Baby Boomer generation, he is finding he is dealing more with the millennial generation, as opposed to the GenX generation. He said:

[When] I came into the company, most of my peers were 5-10 years older. So I was more associated with the Baby Boomer generation, than the Generation X. So the next wave that came into the workforce was the Millennials. My team has a much younger age group. Other groups have more grey beards. The technology for my group is geared to a younger group.

Findings in the category The Importance of Mentoring. Overall, most of the participants agreed they did not have a mentor, nor were they a mentee to someone else. However, most participants echoed that mentoring was important for knowledge transfer to occur. In all instances, all participants were mentors, or had mentees, at some points in their careers. One Baby Boomer indicated, “I am not mentoring anyone right now… [I have] no plan to be a mentor.” Another Baby Boomer expressed that “The mentor/mentee relationship … does bring an informal setup … where you do not have to stick to your statement of work.” A GenX participant, who did not have a mentor, said, “I do know people to go to for information.” There was general agreement among the participants in knowing who to go to for information. There were only two participants who currently served as either a mentor or had a mentee relationship. For the one GenX participant who
had a mentor, the relationship has existed for over one year, with weekly meetings of two hours in duration.

A few participants expressed management’s encouragement to become a mentor/mentee; specifically, one participant said, “Our manager was encouraging the mentor/mentee relationship.” Furthermore, a GenX participant said:

Mentoring is a great piece, and the best way to improve knowledge transfer. Management encourages us to mentor one another. We are organized in such a way, [and] the Leads are in a position, [to] actually share resources, so the younger engineer is dealing with myself on the airplane, [and] other experts in equipment, architecture, and software. They get to deal with the old guys.

While the value of a mentor/mentee relationship was espoused by most participants, many expressed the lack of time to be a mentor/mentee. One GenX participant exclaimed, “I guess because of limited resources and hours, I don’t think we are able to do [mentoring, but] it looks like a good idea … towards getting more knowledge.” The value of the relationship was echoed by a Baby Boomer, who said:

In my case, I did not have an appreciation of what mentoring meant. I thought it was on-the-job, like you have an employee and you need them to get the job done, and you answer their questions. I don’t think that is a form of mentoring. [Mentoring] is a deliberate relationship with a specific purpose to transfer knowledge. One of the criteria [to be a Fellow] is to be a mentor – it is one of the five areas you describe [about] yourself. It was then that I realized what mentoring was all about and helped me realize there are good ways of doing it. I never realized [the relationship and importance of mentoring] until I became a Fellow (recognized industry-wide as an expert).

Three of the Baby Boomer participants highlighted that the organization has a tool called the Mentoring Action Plan. This action plan is one of the organizational artifacts uncovered within the review of secondary sources. The action plan is a formal agreement between the mentor and the mentee. However, it is used only within the organization’s Fellowship Program. One Baby Boomer said, “A more widespread use of the mentoring
tool” would be one way to improve knowledge transfer. However, all three agreed that most people probably do not know such a tool exists. One Baby Boomer participant said:

I’m not sure why I never heard of the tool until I became a Fellow, I should have heard about it before that. [Knowledge transfer] is a hard thing to do, we are such a big company, with so many people, but if there was a way to make the tools more visible to people [that would be a good idea].

On the subject of the mentor/mentee relationship, one of the demographic questions asked at the beginning of the interview, was if the participants were planning on retiring within the next five years. Five out of six (or 83%) of the Baby Boomers indicated plans to retire within five years.

Theme: Promote Knowledge Sharing

The second theme which emerged was the strategies that the participants used in the development of a knowledge base which promoted knowledge sharing. While most participants did not specifically recognize their undertakings as aiding in the development of knowledge sharing, they did discuss four conceptual categories: (a) spending time together, (b) creating document repositories, (c) communication methods, and (d) management encouragement.

Findings in the category Spend Time Together. Participants shared that spending time together would lead to the creation of a knowledge base through the transferring of knowledge. However, in one way or another, many echoed what one Baby Boomer participant believed; “I’m not sure when I’m dealing with people day-to-day if they are Baby Boomer or Generation X. My experience is the younger engineers are very open and receptive to any kind of background or details I give.” Spending time together, sharing experiences, and asking questions were common strategies used by the participants. One GenX participant said, “My general philosophy is to ask more than one
person the question. You tend to get different answers. My job is to take their answers and move forward.”

Findings in the category Create Document Repositories. Layout drawings were one approach used to transfer knowledge. As one Baby Boomer indicated, “[I would give the younger engineer] a layout, we would both mark up our copies separately, [and] then we would compare the two. Most times they were the same, but sometimes they were different, and it would show how he was thinking.” The older engineer explained that he would share his knowledge and review the differences within both layouts for a common understanding and knowledge transfer.

Another strategy used by a Baby Boomer in transferring knowledge was helping the younger engineer to understand why things are done a specific way. One participant said, “Usually knowledge comes from a question or what to do.” These have led to the creation of several online strategies, including user guides and onboarding notes to capture knowledge. One GenX participant said:

> We do have a set of user instructions for doing our daily work, [it] doesn’t encompass everything, just our bread and butter … We originally set it up [and was drafted] by one person. Now that [the user guide is established], we focus less on individual ownership, and more on everyone [owning it]. [If someone sees] something has changed or needs to be updated, they update it themselves.

Most participants agreed that they transferred knowledge to whoever inquired about the knowledge. A few of the Baby Boomer participants agreed that the younger generations “may be looking for a quicker, simpler answer… just tell me yes or no.” However, in all instances, the Baby Boomer participants said they did not give a quick answer. One said, “I’m going to tell you a whole bunch of stuff …with five subtle answers … and [the real answer in number three].”
Six participants were lead engineers in their groups. Each lead engineer indicated that their work was different from the engineer in their group. One strategy that seemed to be used universally among the Baby Boomer generation was to make the younger generation, and not necessarily the GenX generation, think for themselves and understand why things were done a certain way. One GenX lead engineer said:

I try to talk and help the others in my group to solve problems. Especially if we have done it before, I want them to understand the why. Not just go fix this. They need to understand why. It is so process-oriented here, we forget to think. The younger folks sometimes just want to check off the list, not understand the math or reasoning.

Many participants said that they were not the sole keepers of knowledge. One Baby Boomer said, “I am not the only one in my group with the knowledge, but a lot of team members reach out to me.” A GenX participant said:

With Baby Boomers retiring you have lost all [of] their knowledge. It is the unfortunate part for me [because] a great resource and longtime relationship is gone. The part that doesn’t bother me, [as] none of us are the sole knowledge keeper of something. I’m sure I could get the question [answered] somewhere else.

Many Baby Boomers agreed that the younger generation had great ideas. One Baby Boomer said, “I ask [the younger engineer] to show me, and if it makes sense, then I will bring it up in the next group meeting. Everybody has a say in the process. It is good to have more perspectives.”

**Findings in the category Communication Methods.** Overall, the participants declared that the seeking of information, from one another, happened in various forms, with the most popular being email. This method was followed by verbal, including face-to-face, to instant message, phone, WebEx meetings, presentations, and, least used, InSite. InSite is an in-house version of LinkedIn, which connects people and groups,
across the different divisions of the organization. One Baby Boomer participant said: “Primarily everything we do, we communicate amongst various team members.” A GenX participant said: “Face-to-face and email are the top two forms of communication [I use].” Another GenX participant said: “If it is something I need quickly, I’ll walk over and ask … [However, I use] electronic communication [the most]. So there is a record of what did he say I have to do.” Many participants echoed this Baby Boomer participant’s claim:

My preference … is face-to-face, but it is not always possible, with people in different buildings [and geographic locations]. So it forces us to do electronic communication. I feel that we are doing too much email and spending large chunks of our day [emailing].

Upon examining the frequency and preference of communication methods, Baby Boomers are split down the middle, with 50% (or 3/6) preferring email, and 50% (or 3/6) preferring verbal communication. This percentage is in contrast to 83% (or 5/6) of GenX engineers, who selected email as the number one choice for communication. The least used form of communication was InSite, at 92% (or 11/12). One Baby Boomer participant explained InSite by saying:

I would not be surprised by millennials rather than Baby Boomers to use InSite a lot – and it might be dangerous – even though earlier I said engineering is simple, it is just solving problems, it’s complex because we are high-level system integrators and there is no individual single problem that isn’t related to others. My concern about InSite, and I use it a fair bit but strictly administratively, [is] when you are sharing technical knowledge …it is too easy to jump into InSite [for an answer]. Quite often [the answer] may be wrong.

Many Baby Boomers explained that seeking information is more than acquiring a document it is sharing knowledge, listening to the younger generations, being open-minded, showing respect, and being humble. One Baby Boomer participant said:
I think when you are dealing with older generation people and younger generation people, it is very important for the older generation person to swallow your pride and realize many times the young people are more knowledgeable in certain areas than we are. I always treat the younger people with respect. Sometimes both young and old do not want to share data, keep the data, and preserve my job. That doesn’t get you very far. When you need information from a younger person, show them a little bit of humbleness when you ask and they will be more than willing to share. The next time you come, they will be more willing to share because you appreciated it and thanked them….The closer you get to the same age, you have more mutual respect due to age closeness and promote knowledge transfer.

**Findings in the category Management Encouragement.** Generally, most participants agreed that management encouragement came in the form of both email communications and staff meetings. One GenX participant said, “Depends on the level of management, most of that communication is done by email and pointed to some type of program, like mentorship.” Another GenX participant said: “[Communication] travels down from top to lower [employees], from manager to lead to employee.” This idea was contradicted by a GenX participant who said:

There is really not a lot of communication from management. They give us goals for the year in our performance management. There is an All Team Meeting. If you are a Lead … you get a lot more insight … when you are below Lead level, you rely on your Lead for information … You don’t hear as much, and you are more focused on doing your little task.

However, there were a variety of responses related to management’s involvement or not, and whether their involvement was wanted or not. A GenX participant stated:

“Management stays out of the way. They do setup staff meetings.” A Baby Boomer said:

“Our senior manager will come right into my cube and talk with me. That is important.” Another Baby Boomer participant said: “Management needs to be supportive and visible to the teams.” A GenX participant said: “Management encourages us to mentor one another.” A Baby Boomer participant said:
I think the biggest thing is to make sure the managers make a real special effort to be visible to the team on the floor that they support knowledge sharing. However, I don’t think there is much that management does to encourage knowledge transfer other than put together [the] team and develop teaming structures.

A Baby Boomer participant said:

I don’t think management, based on their job roles, have a very direct path for supporting knowledge sharing. They rely on their Leads, subject matter experts, and technical fellows. I think one of management’s biggest roles is to communicate that support [of processes and of doing the job right].

In addition to communication, one comment expressed by many participants was the need for recognition by management for a job well done or going beyond expectations. One participant said: “We as co-workers we can say thank you, and we can do a lot of other things, like bring cookies or fruit for the group. But the managers have a bigger role, being able to really recognize someone.” One participant said:

If you have a group that has done a really good job, [taken] on a huge project and finished it on time, and beat expectations, some element of recognition kind of sparks that initiative to go off and do that again.

Theme: Tacit and Explicit Knowledge

The third theme that emerged was tacit and explicit knowledge. Tacit knowledge was described by some of the study participants as tribal knowledge, storytelling, and subject matter experts. According to some participants, this knowledge is not documented, but rather verbally passed around the organization, and typically only known by one person. Explicit knowledge was described as those formal processes which are documented and do not rely on any one person’s knowledge.

Findings in the category Tribal Knowledge. One Baby Boomer said:

We had a lot of tribal knowledge, and our work statement was not repeatable. So you were always digging the trenches to start your project. Rarely was it ever
something that had been done before, or something you could go find a document that said how to do it.

One GenX participant said:

There is nothing documented. It is all head knowledge. Some knowledge, like process stuff, and decisions are documented. The tribal knowledge and experience, the “Hey, what is the reason behind the requirement?” is shared and is traceable. That is the piece I see is important to transfer down to people: The whys.

A Baby Boomer said:

But most of how I know who to talk to, or seek advice from, is someone with tribal knowledge. I think you get a sense, once you have been here a while, if you don’t have a list of subject matter experts, that knowledge evolves over time.

One GenX said:

Baby boomers retiring will impact my work with more pressure [but] no matter what, we will find a way to fix something or find something errors. So at the end, all will be okay, but [still] feeling pressure to find [a] solution. This makes people grow more, I guess, because now you have to stand up and be responsible. The information that is the most important is in their head somewhere. We can save what we know, but what we don’t know – we don’t know what to ask or what we need. That answer is in someone’s head. So we just have to get more experience to gather information.

**Findings in the category Storytelling.** Another form of tacit knowledge or head knowledge is storytelling. One GenX said:

It’s conversation; it’s the higher level and storytelling. It’s like storytelling of the problems we had to solve, the systems we had to build, the technologies we had to use, [but also] why we did it that way, the requirements [the senior engineers] were challenged with. That would be how that is shared.

**Findings in the category Subject Matter Experts.** Other participants highlighted the use of subject matter experts in the knowledge transfer process. One Baby Boomer participant said:
I think you get a sense, once you have been here a while, of [the] subject matter experts. Like who can help you the quickest. It is easier for me, than others, because I’ve been in this organization my whole career, moving among the various airplane programs, so I know who the guru is on the subject.

A GenX participant said:

Trying to figure out what am I going to do for this particular event, where is the information I need to do it. You are asking colleagues and subject matter experts. I understand the processes and the tools, but it is applying that knowledge which is huge.

In addition to seeking information and uncovering tacit knowledge, explicit knowledge was the other conceptual category related to knowledge. This form of knowledge included the conceptual categories of formal documentation and informal documentation.

Findings in the category Documentation. Documentation was described in two ways: formal and non-formal. Both formats are discussed in more detail below. Formal documentation took various forms, including a formal workplace organization method called 5S, in which 5S represents Sort, Set in order, Shine, Standardize and Sustain. 5S is part of the organization’s implementation of Lean culture and is intended to simplify and standardize the workplace. A few participants highlighted the need to share knowledge, not through tacit knowledge or the spoken word, but rather through written forms of documentation.

One Baby Boomer explained:

You have to be polite, and speak slowly, and make them understand, [even] if you have to write it down, and sometimes it is difficult to explain, then write it down to highlight and then sit down and explain. You can also make a presentation so that they can understand it. If I talk to you about many things, you can forget, but if it is a document, then they will have it to look back on and refer to. Just speaking is not a good way to share knowledge to somebody else.
A GenX participant said:

I don’t know if everything that we need to learn is being transferred into documents or later retrieved in the form of data. If it is related to work and if it is structured knowledge that has been developed over time, then that has been documented over time and that is good. I think out of the 5S documents we are creating now, they are including that kind of information. We have a server for those documents and it contains the instructions. We don’t have a good method setup currently to go and get that information and put that in there. We are working on enhancing our 5S structure currently. We are working towards dividing that responsibility to different people, and see if that helps improve [our ability to retrieve data].

Informal documentation processes included: user guides, personal notes, emails, presentations, instant messages, standard processes, and onboarding procedures. A GenX participant spoke of an onboarding guide for new team members, he said:

[The onboarding guide began] because of 5S. A lot of it was when we had new people join the group and they have the same questions. There are checklists for the first 30 days in the job. But it is really up to the Lead to go through the 30-day and 90-day checklist to make sure they know where everything is.

Both generational groups spoke about the effectiveness of user guides. Their explanations were echoed by this GenX participant, who said:

The primary thing I do, is to develop the user guides. Our company mandated us to do 5S; it was a push two or three years ago. That 5S push had a lot of resistance, and it was difficult for us to continually do stuff. There was constant pressure, and in the near term this additional work we were not planning for… It is better to do it when you are in the middle of [your work]. There are all kinds of subtleties that occur and you forget about if you do it on downtime. Our programs are about 12 months long; we work roughly two or three programs a year. So you could be doing a task only two or three times a year, and it is harder to remember how to do something if you only do it every 6 months. The user guides help us to remember and execute well.

In summary, the most popular choices for communication were face-to-face, email, and phone. Some participants corroborated the use of their gut feelings to seek out the experienced person, and to treat people with respect. An organizational 5S initiative
which occurred a few years ago was credited with having useful documents to refer to by
the teams. Most participants recognized the value of these documents, but there are still
groups whose documents are either not easily retrievable or not yet documented. When it
comes to communication, one Baby Boomer participant put it succinctly:
“Communication is how we can make this company, our work together as a team. That’s
the first thing.”

The three themes described above uncovered how the participants believed
knowledge transfer currently happens and how it should happen. Overall, participants
expressed the challenge for their groups was turning tacit knowledge into explicit
knowledge. Furthermore, strategies used to support knowledge transfer included
encouragement by management and the transfer of skills and knowledge. Ultimately, the
participants believed knowledge transfer comes from one another, and while management
should be an encourager, encouragement is not always required, or necessary, for the
exchange of knowledge to take place.

**Organizational Artifacts**

The organization being studied has several organizational artifacts related to
knowledge sharing. These secondary sources of data included a knowledge transfer
planning process (specific steps to transfer knowledge), a generational diversity
roadshow (explaining learning and working differences), and a mentoring action plan
(specific steps and actions for the mentor/mentee). Each of these data sources was
uncovered by talking with employees and then doing an organizational document search
from the organization’s internal website.
First, there is a knowledge transfer planning process. This guide provides specific steps to ensure that a knowledge plan is put in place before a Baby Boomer retires. While this plan could be a vehicle for knowledge preservation and future sharing, there are a few pitfalls with the knowledge plan. First, it is at the discretion of the immediate supervisor to determine if a knowledge plan is required. Next, a timeline of completion is negotiated before the employee leaving the organization. Finally, there is no guarantee the employee voluntarily shared all relevant knowledge. According to the Human Resources consultant interviewed, an “estimated 40% of people leaving the organization actually had a knowledge plan”.

Second, the training department at the organization has been doing a roadshow on generational diversity. This presentation is a synopsis of the different generations, their learning styles, and the unique characteristics of each group. The presentation is given on request. However, one shortcoming is if employees do not know of its existence, they could miss an opportunity to educate their team. There are also a few training classes available to all employees which provide highlights of the generations in the workforce. These classes are not mandatory. Once again, if employees do not know of their existence, and how to search for them in the training database, a valuable training opportunity is missed. None of the participants interviewed mentioned any awareness of either the roadshow or of the training classes offered.

Third, there is a mentoring action plan (MAP) about which three participants spoke; however, only one participant officially used this plan. The remaining nine participants did not make mention of its existence. The MAP is a five-year plan with
specific requirements including career goal planning, experiential learning, relational learning, and formal learning. The manager must sign-off on the plan.

**Chapter Summary**

Based on common language, themes, terms of reference, and examples described during the interviews, the most prevalent responses included: (a) transferring the knowledge to whomever needed the knowledge; (b) realizing that the most experienced person may not be a Baby Boomer; (c) acknowledging that most participants did not have mentor and yet espoused the known benefits of being mentored; (d) finding knowledge through one’s personal network and experience; (e) identifying tacit knowledge and the means to extract it; (f) having documentation available for general use; (g) seeing the role of management and their encouragement; and (h) acquiring skills to avoid a skills gap in the future.

Several organizational artifacts were uncovered which could help with the preservation of knowledge and educate the generations. However, these artifacts appear to be not well-advertised within the organization, as evidenced by only a few participants being aware of their existence. The artifacts also require either dependence on management’s involvement or the knowledge of generational training that is available.

The next chapter contains a description of these findings regarding how they apply to the problem statement, the research questions, and to the current research in the area of knowledge management, specifically the impact of lost knowledge and the process of knowledge sharing. Furthermore, Chapter 5 contains a discussion of the application of these findings for leaders so that they may be able to develop knowledge
sharing programs to mitigate lost knowledge. Recommendations for action and future research will also be made.
CHAPTER 5: CONCLUSIONS AND DISCUSSION

This study was designed to highlight the problem of leaders not addressing the potential intellectual impact of knowledge loss resulting from demographic shifts in the US workforce. The purpose of this qualitative study was to explore the process of arriving at organizational knowledge sharing resulting from the Baby Boomers’ retirement, through the sharing of knowledge between Baby Boomers and GenX aerospace engineers. The research questions were designed to generate awareness of how two generations of aerospace engineers, specifically Baby Boomers and GenX, describe their experiences with knowledge transfer and the strategies used to support such a transfer. This study was guided by the following three research questions which were crafted based on the literature review:

1. How do aerospace engineers describe their experience of knowledge transfer from Baby Boomers to GenX aerospace engineers?
2. What is the knowledge transfer process between Baby Boomers to GenX aerospace engineers?
3. What types of strategies support knowledge transfer from Baby Boomers to GenX aerospace engineers?

This qualitative study reflected the findings which emerged from 12 semi-structured interviews conducted with six Baby Boomers, and six GenX aerospace engineers from an aerospace organization located in the Puget Sound, WA. A purposeful sample was constructed from responses to an email sent out to all engineers within one department. The case study methodology was selected to examine the problem highlighted above. The conceptual coding process was enriched with research notes,
observations, and organizational artifacts. As a result of conceptual coding, three themes emerged: (a) organizational knowledge transfer; (b) promotion of knowledge sharing; and (c) tacit and explicit knowledge.

Following this introduction, Chapter 5 is structured into five key areas pertaining to knowledge sharing among aerospace engineers. These areas include: (a) discussion of the findings and conclusions for each research question, in which the details of the findings are explained and contrasted considering the current literature; (b) the application of findings and conclusions to the problem statement; (c) the application of the findings to leadership; (d) recommendations for both business leaders and academic research; and (e) a concluding statement.

**Discussion of Findings and Conclusions**

The data gathered for this study were guided by three research questions. Responses to each of these questions and relevant conclusions are based on the three themes that emerged from the data. While the three themes are reported as being discrete or separate from one another, some of the themes overlap.

**RQ1: How do aerospace engineers describe their experience of knowledge transfer from Baby Boomers to GenX aerospace engineers?**

The first research question was aligned with interview questions 3 and 4 (Appendix B) and was designed to address two items. This research question examined the knowledge transfer experience from Baby Boomers to GenX aerospace engineers, and sought to uncover any strategies that create a knowledge base. It also uncovered three key areas. The data revealed that the knowledge transfer experience happens ad-hoc, that mentoring is important, and that strategies are needed to capture knowledge. In research
that explored generations and the workforce, Woods (2016) hypothesized that the changing generational mix is impacting organizations. This change in the workforce, due to the Baby Boomer generation retiring, should motivate leaders to enable the knowledge transfer experience and create a knowledge base.

**Knowledge transfer experience.** Participants in this study indicated that they had good experiences with their colleagues and that knowledge was transferred not only to the GenX population but to everyone. When describing their experiences of knowledge transfer from Baby Boomers to GenX aerospace engineers, the participants indicated that engineers voluntarily share their knowledge with whoever asked or needed it. This voluntary sharing of knowledge coincides with Sanaei, Javernick-Will, and Chinowsky’s (2013) research, which indicated that knowledge sharing connections that span across the generation is required to facilitate effective knowledge sharing.

The data also revealed that the Baby Boomer generation had greater ease in sharing knowledge and talking with that generation closest to them in age – the GenX. In a study on sharing knowledge between generations, Naim and Lenkla (2016) discussed that knowledge sharing, including exchanging information and knowledge among various employees, is considered the principal element of KM. This proposition was confirmed by the participants’ willingness to share both knowledge and experiences as expressed in their actions to work first-hand with teammates and provide information to whoever asked. One Baby Boomer participant said: “The kind of knowledge transfer that occurred between myself and [an] engineer was hands-on [as opposed to any written communication].”
One advantage heralded by participants included proximity to one another to enable a better knowledge sharing experience. One participant commented that some of his team members were located in a different geographic location; he said: “My product group was transferred to Charleston, and they reach out to me a couple of times a week.” While another commented that, in his opinion, knowledge transfer happens when sitting near to each other; he said: “frequently change the seating – where we are sitting [to improve the sharing of knowledge]”. Both McNichols (2010) and Zuofa and Ochieng (2017) pointed out the importance of geographic proximity for successful knowledge transfer. Working side-by-side was echoed by the participants as an advantage to sharing knowledge.

To promote knowledge sharing, leaders might reinforce the value both of a person’s knowledge and the sharing of that knowledge. In an article about identifying and sharing existing knowledge, Lin and Joe (2012) uncovered leadership implications which would enhance employees’ ethical behavior regarding sharing and helping one another. This sharing of knowledge satisfies one dimension of KM. However, the data did not reveal if employees realized that in sharing knowledge they were bridging knowledge and creating value for the organization, a possibility suggested by Brcic and Mihelic (2015). Similarly, Kinato, Vanhala, and Heilman (2016) concluded that the sharing of knowledge leverages the entire knowledge of the organization. All these actions can result in the organization competing more effectively.

**Importance of mentoring.** Participants described that they were not actively involved in a formal mentoring plan. Many participants agreed there was an absence of mentoring within the organization and that, to them, one key to knowledge sharing was
mentoring. That said, many participated informally as mentors to the younger generations and referred to seeking out the most-experienced, as opposed to the oldest engineer, when they sought out knowledge. The participants indicated that while they valued the role of the mentor/mentee, most did not participate in such a relationship. Those who did not have a mentor or mentee claimed they were too busy with work to have the time to engage in a structured activity such as formal mentoring.

The organization has a tool available to all called the Mentoring Action Plan. Three participants made mention of this tool, and of the three, only one participant used this action plan in his mentoring relationships. In an article about the value of mentoring, Joe, Yoong, and Patel (2016) listed three benefits of mentoring: (a) obtaining organizational knowledge; (b) preventing knowledge loss; and (c) providing experiences for the younger generations. The importance of a mentor was echoed in Bennet and Bennet’s (2008) research on the benefits and successes formal mentoring programs have with employees and organizational knowledge retention. Furthermore, the absence of a mentor was identified in Chapter 2 as an obstacle to knowledge transfer (McNichols, 2010). For the organization being studied, the loss of knowledge through the lack of a mentor relationship is a real threat to the organization’s intellectual capital and its future.

**Strategies developed for a knowledge base.** All the participants agreed there was no singularly specified strategy used to capture knowledge and that each group derived its own processes. These processes were in the form of online documents, such as a user guide or an onboarding document, and were informally updated. Other strategies included spending time together, talking, solving problems, making use of layout
drawing, having the younger generation think for themselves, and helping the younger engineer understand why things are done a specific way.

While these strategies were not officially mandated or followed by the organization as a whole, the research of Kothari, Hovanec, Hastie, and Sibbald (2011) highlighted how KM began as the creation of strategies and uses information and people to create knowledge assets. Regardless of what the strategy is, or whether it is a formal process, the data suggested the employees are creating and preserving knowledge. This sharing of ideas could lead to what some researchers referred to as the opportunity to create knowledge and generate more ideas, which ultimately could create innovation, a competitive advantage, and corporate success (Brcic & Mihelic; Wang, Noe, & Wang, 2014). As one participant said:

With the [frequent] change in work assignments, you have another task of keeping that file up-to-date [and sometimes we do not have extra time but] at least if you have one name then you can go talk to that person, and he can probably forward to you the name you could talk to.

Participants highlighted that no singular person was the sole keeper of all the knowledge. With perseverance, one could always find a way to retrieve knowledge from other people. This perseverance is in accord with Joe et al. (2013) who posited that people have relationships with many stakeholders to mitigate any loss of knowledge due to a sole keeper of knowledge.

Participants’ spoke of the voluntary nature of knowledge sharing. In an article on the relationship between knowledge sharing, commitment, and intention to stay, Naim and Lenkla (2016) described the knowledge transfer process as the willingness to share personal knowledge and skills with others. Both the comments from the participants and the research of Naim and Lenkla (2016) suggested that organizations should introduce
strategies to encourage both the sharing and subsequent collecting of the knowledge. One such strategy could be a succession plan or a pipeline of talent, as proposed by McDermott and Marshall (2016), who detailed that such an initiative could limit the impact of the Baby Boomer retirement and help to promote stability and long-term continuity of the organization.

RQ2: What is the knowledge transfer process between Baby Boomers to GenX aerospace engineers?

The second research question sought to uncover the knowledge transfer process between the Baby Boomer and the GenX aerospace engineer and was associated with interview questions 1 and 2 (Appendix B). This question was designed to address two items. The first interview question was asked to uncover the various forms of communication used for knowledge transfer. The second interview question was asked to understand the way engineers acquire knowledge from other generations to facilitate knowledge transfer. The most common themes mentioned in the participants’ responses were communication methods, identifying tacit knowledge, and forms of documentation available for general use.

Communication methods. There were many forms of communication described by the participants. The data suggested the most preferred method for information gathering was email, followed by face-to-face. A participant said: “Most of it is sharing by email.” The preference for face-to-face communication was recommended by Kianto et al. (2016) as the most effective form of knowledge sharing. While face-to-face was preferred, it was not always achievable. The organization in this study has several locations across the USA, and if the person with the knowledge is not co-located, then
one must rely on another, less preferred method of communication. This method of communication could be phone or WebEx. However, gut feeling was one method used when needing to find a knowledge source. One Baby Boomer participant said:

I know who to go to for knowledge through my gut feel, based on experience, prior interactions with that person, and the advice of a co-worker. Like who can help you the quickest. I think can get in touch with the right person, it is a gut feel who knows what and who has worked through some these major problems.

**Tacit knowledge.** In addition to information seeking, many participants described the undocumented knowledge within the heads of those with experience. There was a common voice among the participants concerning the impact to their current work statement with the Baby Boomers retiring and not sharing their head knowledge. Specifically, the data suggested that many participants believed employees in the organization were the keepers of head knowledge, or tribal knowledge, or resorted to storytelling.

Chapter 2 highlighted Social Exchange Theory and the fact that individuals weigh the costs and benefits to themselves before engaging in knowledge sharing (Blau, 1964). It is possible that Baby Boomers do not see the benefit of sharing knowledge without being directly asked for any knowledge. Hoarding knowledge was identified as one of the negative outcomes of Social Exchange Theory (Ramanigopal, 2012). Participants did not suggest people hoard knowledge; in fact, a GenX participant said: “We have many material experts and if you ask enough people, you will find who you are looking for.”

Since knowledge sharing requires a person to actually share, Kianto et al. (2016) discussed the importance of face-to-face sharing when extracting that tacit knowledge which resides deep within. McDermott and Marshall (2016) confirmed this concern in their research with managers not realizing what was lost in knowledge until the employee
was no longer with the organization. Participants’ highlighted that their management also expressed a concern over this knowledge loss.

**Explicit knowledge.** Explicit knowledge, or documentation, was the third theme which arose from this research questions. Explicit knowledge is the opposite of tacit knowledge, and for this organization, the documentation took many forms in the organization, from an organization method called 5S to user guides, presentations, emails, and instant messages. Some participants suggested the need to share knowledge via the written word. Prasarnphanich, Janz, and Patel (2016) explained the challenge for leaders to turn tacit knowledge into explicit knowledge. Rivers (2015) conducted a study to determine the most effective method of knowledge transfer perceived by Baby Boomers. Rivers’ research concluded explicit knowledge to be perceived as the most effective method when transferring knowledge to the other generations. Furthermore, Rivers’ research confirmed that the efficacy increased when a Baby Boomer trained a person.

A GenX participant said:

> I’m always trying to get things down on paper. I think the main knowledge transfer should be a set of processes of what we do in the group. My group doesn’t have this. At the moment, we have a mish-mash of how-to guides. People just create their own individual cheat sheets, with reminders of what I have to do. There is not a team one. They don’t seem to have this process nailed down.

The data in Chapter 4 suggested that this organization does practice turning some of its tacit knowledge into explicit knowledge. One suggestion made by Watroba (2017) was for employees to develop an attitude of ageless thinking. Most Baby Boomers indicated the need for respect towards others and being cooperative with one another to build a relationship of continued knowledge sharing. This finding correlates with Leader-
Member Exchange Theory which indicated that followers negotiate their relationship over time (Dansereau, Cashman, & Graen, 1973).

**RQ3: What types of strategies support knowledge transfer from Baby Boomers to GenX aerospace engineers?**

The third research question was aligned with interview questions 5, 6, and 7 (Appendix B). The final research question was designed to address two items: what engineers believed to be management’s responsibility to promote knowledge sharing, and how the transfer of skills and knowledge occurs. The most common themes mentioned in the participants’ responses were the encouragement by management and the acquisition of skills to avoid a skills gap in the future.

The data exposed that many believed a necessity for knowledge transfer to occur was management’s need to be supportive, visible, and encouraging. This finding is corroborated with the literature in Chapter 2, which suggested that for an organization to create and recognize strategic knowledge, leadership must be actively involved (Mahmoudsalehi, Moradkhannejad, & Safari, 2012).

**Management encouragement.** The 2014 Deloitte Millennial Survey highlighted that innovation was hampered by managers unwilling to collaborate with other others (Woods, 2016). However, this detriment was not the case with the participants in this study. Participants overall indicated their manager was supportive. This support was seen in various forms from written communication to staff meetings to visiting them at their desks. Various participants claimed that their manager was visible and encouraged the recording of processes and new methods. This finding also points to management’s active involvement in leadership and corroborates the positive correlation highlighted in
Chapter 2 between the leader and organizational learning (Noruzy, Dalfard, Azhdari, Nazari-Shirkouhi, & Rezazadeh, 2013).

The relationship between the leader and the employee may influence knowledge sharing. Woods (2016) highlighted the different preferred management styles by the generations. Specifically, Baby Boomers preferred a directive style of leadership compared to GenX who preferred autonomy and job satisfaction compared to Millennials who desired feedback and accomplishment. This latter group (the Millennials) responded positively to a transformational leadership style, and GenX with a collaborative leader (Woods, 2016). This information would suggest that a participative relationship with management is the leadership style which would enable and encourage a knowledge sharing environment. The participants in this study described their leadership as collaborative and participative.

**Acquisition of skills and knowledge.** One strategy discovered by the participants’ responses was that a knowledge sharing plan was required to capture knowledge. Castellano, Davidson, and Khelladi (2016) suggested that physical separation may hinder the knowledge sharing process. In fact, the greater the distance between the teams, the less effective and slower the knowledge sharing becomes (Castellano et al., 2016). Mabey, Wong, and Hsieh (2014) suggested that the social and informal contact afforded a team sitting beside one another is important in creating constructive work relationships conducive to knowledge sharing. One item raised as a barrier to knowledge sharing by the participants was being in different geographic locations.

Woods (2016) stated that the culture of an innovative company begins with its employees, and this culture nurtured happy and motivated employees. One way to create
A culture of innovation echoed by the participants in this study was with regards to reverse sharing. Woods (2016) identified the benefits of reverse sharing between Baby Boomer and GenX generations, namely new insights into technology and higher levels of engagement.

As Baby Boomers continue to leave the workplace, their expert knowledge will be lost if there is no knowledge sharing plan put in place (Kianto et al., 2016). The participants of this study have acknowledged the deep and vast knowledge experiences held by the Baby Boomer generation. Joe et al. (2013) stated the organization’s need to acknowledge this deep knowledge, to identify what is being lost, and to capture specific knowledge. As the Baby Boomers retire, organizations will continue to be faced with unrecoverable knowledge loss unless a method to capture the knowledge is implemented (Joe et al., 2013).

**Application of Findings to the Problem Statement**

The findings identified in the study were: (a) a Baby Boomer was not necessarily the person with the most knowledge or experience; (b) the documenting of tribal knowledge and/or processes needs to be accessible for all employees; (c) the implementation of a formal mentor/mentee program is desirable; (d) the development of strategies for a knowledge base is necessary; (e) the uncovering of tacit knowledge must become explicit knowledge; (f) the implementation of a process of document explicit knowledge is required; (g) the active encouragement from management should be to share knowledge among team members; and (h) the ability to set up time and meetings for the transfer of skills and knowledge is provided.
Therefore, the general problem addressed in this study was the noted current demographic shifts impacting U.S. organizations’ intellectual capital. Within the organization being studied, 83% of the Baby Boomers interviewed have their sights on retiring within five years. This potential loss of deep knowledge with no plan to capture the knowledge can threaten the future of the organization. With no known and publicized knowledge plan related to the transfer of skills, mentoring, extracting tacit knowledge, and documenting explicit knowledge, there will be a knowledge gap unless initiatives are implemented in the near future, which can help to mitigate knowledge loss.

This qualitative study was designed to explore the process of organizational knowledge sharing as impacted by the Baby Boomers’ retirement, through the sharing of knowledge between Baby Boomers and GenX aerospace engineers at an aerospace organization in the Puget Sound region of Washington State. To determine answers to the research questions and subsequently help to solve the impact of the problem, several recommendations will be presented later in this chapter.

**Application to Leadership**

These findings directly address the specific leadership problem, which is that leaders have not addressed the potential intellectual impact resulting from the critical tacit knowledge lost due to the Baby Boomers’ retirement. Most of the participants echoed the importance of a mentor/mentee relationship. The value of a mentoring plan was also promoted by Hagemann and Stroope (2013) who supported a mentoring program that creates an ongoing relationship between the more-experienced Baby Boomer and the less experienced GenX employee. Furthermore, Hagemann and Stroope suggested that mentors could expand the potential of employees through the teachable moments within
the mentoring relationship. With 83% of the Baby Boomers in this study planning to retire within the next five years, leaders must seek to understand how to re-engage the Baby Boomer worker and implement a knowledge transfer program through mentoring (Duxbury & Halinski, 2014). Based on the research of Kianto et al. (2016), management should build up a knowledge sharing culture by having frequent face-to-face interactions and by creating learning experiences.

As the generational landscape continues to change with the Baby Boomers retiring, leaders should examine the opportunity to update policies on flexible work hours, mentorship programs, and implementing a formal knowledge-sharing plan. This implementation is in agreement with Woods (2016) who determined that business leaders must adapt to the generational shift to effectively innovate and remain competitive. Finally, for the leaders of this organization, the creation of formal policies with a communication plan will help to instill a knowledge sharing community. This plan should include the following elements: (a) an understanding for the demand for knowledge, (b) a consideration of those who need the knowledge, and (c) a location for the stored knowledge. Furthermore, the plan should include a specific timeline, such as 30, 60, 90 days, and later, and knowledge to be shared.

**Recommendations for Action**

The fact remains that the Baby Boomer generation is getting ready to retire and therefore, their tacit knowledge needs to be extracted. However, there were two gaps identified in the extant literature: human resistance to share knowledge and the direct influence of a leader’s management style. The findings from this study help to address those two gaps. Furthermore, based on the data and findings resulting from this
qualitative case study research, three recommendations are suggested. Each of these recommendations has implications for the organization studied. To reduce the impact of critical knowledge loss as the Baby Boomers retire, the three recommendations for action include: (a) turning tacit knowledge into explicit knowledge, (b) creating knowledge sharing activities, and (c) developing purposeful leadership.

**Turning Tacit Knowledge into Explicit Knowledge**

The first recommendation is to turn the tacit knowledge into explicit knowledge. This recommendation aligns with research from Prasarnphanich et al. (2016) who developed a framework for how knowledge is shared with others. The extant research explains that knowledge is both explicit and tacit, and can be codified and communicated (Schoenherr, Griffith, & Chandra, 2014). In contrast, tacit knowledge is difficult to codify, is based on one’s experiences and is subjective (Schoenherr et al., 2014; Scully, Buttigieg, Fullard, Shaw, & Gregson, 2013). Therefore, the challenge for any organization is to extract the tacit knowledge into meaningful explicit knowledge.

The organization should implement and use the knowledge sharing plan (aka knowledge transfer process) that it currently has. Presently, it is not well known. Management should begin to use this plan across the organization to identify the talent and subsequent knowledge that could be lost through retirement. By using this plan, the organization will have one method to mitigate knowledge loss. Management’s goal for the knowledge transfer plan should be to turn tacit (or head) knowledge into explicit (or vocalized) knowledge. The exposing of explicit knowledge allows it to be shared across the organization and could help create innovation (Scully et al., 2013).
The organization should implement a formal mentoring program. With the Baby Boomer generation approaching retirement, coupled with their deeply embedded knowledge, the challenge for leaders will be to turn their tacit knowledge into explicit knowledge (Prasarnphanich et al., 2016). The key to KM sharing is to extract the tacit knowledge (Bennet & Bennet, 2008). KM sharing initiatives can take many forms, such as mentoring and communities of practice. The recommendation is to formalize mentoring, through the use of an existing organizational program – The mentoring action plan (MAP). This plan would involve both management and employees and create the opportunity to share knowledge in an organized, formal fashion. A formal mentoring plan would also help to promote and encourage network building. The benefit of a mentoring action plan would be the sharing of knowledge and the accountability to all parties participating in the plan.

The next way to convert tacit knowledge into explicit knowledge is to investigate a way to document processes throughout the organization in one central location, for all to use. This process of converting knowledge must be easy to use and the documents easy to find. The organization currently has a 5S process, an organizing method that many participants spoke highly of. This 5S process could be used more formally and monitored by the lead engineers and management to ensure completeness. Lead engineers within the organization can be the instigators and overseers of their groups in the creation of 5S documents.

**Creating Knowledge Sharing Activities**

The second recommendation is to create knowledge sharing activities. In an article on motivations that affect employees' knowledge-sharing intentions, Chuang,
Chen, and Tsai (2015) stated that ideally, these activities should involve communicating with team members and creating a friendly work environment. Such a work environment has been shown to nurture both knowledge exchanges and help to change employees’ attitudes to increase trustworthiness and respect for knowledge sharing activities (Chuang et al., 2015). This teamwork could be accomplished through continued management support and encouragement to build relationships between the generations.

Management encouragement was another finding from this study. A recommendation would include management’s involvement and encouragement in the knowledge sharing activities, including using the previously highlighted mentoring action plan and the knowledge transfer plan. Management encouragement could also take the form of rotating the seating structure regularly to expose people to new people, but more importantly to encourage and highlight knowledge sharing processes.

Participants stated how busy they were and how they lacked spare time. One recommendation would entail setting aside specific time for knowledge sharing. While this plan may be viewed as non-productive work, from a KM point of view, the capture and sharing of knowledge would benefit the organization and help turn tacit knowledge into explicit knowledge. The implications of a future skills shortage should encourage leaders to take action as soon as possible. Management would need to encourage and enforce teams to meet for specific knowledge sharing activities. These activities could be mentoring initiatives or sharing specific knowledge about a project.

**Purposeful Leadership**

One area in which knowledge sharing could be more effective and mitigate knowledge loss is through purposeful leadership, which could benefit a successful
knowledge transfer process and help to address the predicted intellectual impact from retirement within the aerospace sector. Purposeful leadership would include recognition events and training activities to highlight the generational differences. Purposeful leadership would also include mindful communication to help educate and make aware of new initiatives with regards to knowledge sharing and collaboration throughout the organization. The aerospace industry faces the three challenges of a reduction of resources, a knowledge-based reward culture, and a decrease in employees (Ramanigopal, 2012). Because of these challenges, KM implementation strategies could include the following potential solutions: (a) peer networks, (b) benchmarking, and (c) buy-in from generations.

**Recommendations for Further Research**

The findings from this study confirmed the need to share knowledge across the generations before the Baby Boomer cohort retire and take with it deep tacit knowledge. The literature has shown that a lack of knowledge sharing will impact the aerospace industry as the Baby Boomers retire. To extend the learning about the process of knowledge sharing and preserving intellectual capital to prevent further knowledge loss, future researchers may continue to uncover methods, processes, and ways to shed light on the problem.

Several key areas for future research include:

- To increase the sample size of a future study for a richer data set.
- To examine how to re-engage the Baby Boomer cohort and encourage knowledge sharing activities via a research study.
• To investigate the other generational cohorts and their knowledge-sharing activities, including Baby Boomer and Millennials, or GenX and Millennials.

• To conduct this study using a correlational survey research design to determine if two or more factors are related.

• To explore management views of knowledge sharing and the impact on the organization.

• To study productive mentoring activities that can increase the knowledge base within an organization.

• To expand this research across different organizations to determine if the findings from this study can be replicated. These organizations could be from the aerospace sector.

• To explore the connection between information and technology.

• To determine if there are differences in the types of knowledge between older and younger generations, including experience, skill, and use of technology between older and younger workers.

**Concluding Statement**

This dissertation examined the process of organizational knowledge sharing as impacted by the Baby Boomers’ retirement through the sharing of knowledge between Baby Boomers and GenX aerospace engineers. Based on the findings from this study and a review of the relevant literature, tacit and explicit knowledge was both difficult to extract and not shared consistently or formally. Organizational knowledge sharing, promoting knowledge sharing, and converting tacit knowledge into explicit knowledge were found to be the three key themes to influence knowledge sharing activities.
The demographic shift is real, and the emerging workplace must be one of collaboration, flexibility, creativity, and tolerance if knowledge is to be shared, captured, and competitive competencies harnessed (Hagemann & Stroope, 2013). As each new generation is added to the workforce, it brings with it a unique set of challenges and opportunities for leadership (Woods, 2016). With several generations currently in the workplace, coupled with their differing workplace behaviors (Hall, 2016), leaders must vary their approach to work so that knowledge transfer can be fluid and captured. While the problem of this current demographic shift continues to impact this particular organization’s intellectual capital, it is important for organizational leaders to become engaged and provide opportunities to turn tacit knowledge into explicit knowledge, create knowledge sharing activities, and enact purposeful leadership to halt the potential loss of deep knowledge which threatens the future of the organization.

In a competitive, global economy that is ever-changing, organizations must implement methods to capture their knowledge to preserve their competitive advantage by implementing a series of policies and practices which will turn tacit knowledge into explicit knowledge. The data in this study will help leaders: (a) understand knowledge sharing and the difficulties in extracting knowledge, (b) recognize its criticality to the organization’s competitiveness, and (c) realize the potential knowledge gap if nothing is done. With the pending Baby Boomer retirements coupled with the predicted shortage of skilled engineers, there is no doubt that if this organization does not create a publicized knowledge plan and take action now to prevent knowledge loss, there will be a knowledge gap that will cripple the future of the organization. The time for action is now.
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exploration of task/technology fit in an applied knowledge management context.


APPENDIX A

Participant Recruitment Email to be Sent Out

Dear (Potential Participant Name):

Thank you considering to be a participant in this study. I am a doctoral student at City University of Seattle. I have received approval from City University of Seattle Institutional Review Board (IRB) to conduct research.

I am now contacting individuals to be a part of this study and recruiting to interview for my project. You have been identified as a potential participant. Your expression of interest does not confirm being selected to participate in the study. If selected there will be no direct benefits, inducements, or rewards to you for participating in this study. However the information you share will help leaders to better understand knowledge transfer and knowledge loss. You are free to choose not to participate. If you do not participate there will be no penalty. There are also no costs to participate in this research. All information gathered will be treated as confidential. No personal identification (such as names) will be used in any documents arising out of the research.

The topic of my dissertation research revolves around knowledge sharing between the Baby Boomer and GenX generational cohorts. The research study is designed to explore the ways organizational leaders have addressed the process of organizational knowledge sharing between Baby Boomers and GenX aerospace engineers, influenced by the Baby Boomer retirement.

Participant parameters: I am currently seeking English speaking participants that are 21 years and older, belonging to one of two age groups: Baby Boomer (born between 1947 through 1964), or Generation-X (born between 1965 through 1980) to participate in a face-to-face semi-structured, voice recorded interview for approximately 45 minutes. Participants must be currently employed.

For more information please contact me so that I can obtain a signed consent form and schedule your interview.

I look forward to hearing from you in the near future.

Sincerely,

Mary Bethune
APPENDIX B

Interview Questions

The interview questions are based from the research questions of this case study.

1. What forms of communication do you have with your fellow engineers?

2. How do you acquire knowledge with other generational cohorts (e.g. Baby Boomers, or GenX Aerospace Engineers)?

3. Given the complex nature of engineering, tell me how you are encouraged to share knowledge, so that strategies can be developed to help create a knowledge base?

4. What is your experience in knowledge transfer from Baby Boomers to GenX Aerospace Engineers?

5. What types of methods are used by management to encourage knowledge transfer from Baby Boomers, born between 1946 and 1964 to GenX, born between 1965 and 1980, Aerospace Engineers?

6. Please explain how these communication methods support the sharing of knowledge.

7. What do you think is management’s responsibility to promote knowledge sharing?

8. What is your recommendation to improve knowledge transfer across the generations?
School of Applied Leadership
I, _____________, agree to participate in the following research project to be conducted by Mary Bethune, student in the Doctoral Program. I understand this research study has been approved by both the City University of Seattle Institutional Review Board and the Boeing Company Institutional Review Board.

I acknowledge that I have received a copy of this consent form, signed by all persons involved. I further acknowledge that I have been provided an overview of the research protocol as well as a detailed explanation of the informed consent process.

**Title of Project:** Knowledge Management and the Transfer of Knowledge between Baby Boomers and Generation-X Aerospace Engineers  
**Name and Title of Researcher(s):** Mary Bethune  
**Faculty Supervisor:** Dr. Joel L. Domingo  
**Department:** Applied Leadership  
**Telephone:** (206) 239-4770  
**E-mail:** jdomingo@cityu.edu

**Program Coordinator (or Program Director):**

**Sponsor, if any:** Not Applicable

**Purpose of Study:** The purpose of this qualitative research study is to explore the process of organizational knowledge sharing as impacted by the Baby Boomers’ retirement, through the sharing of knowledge between Baby Boomers and GenX aerospace engineers at an aerospace organization in the Puget Sound region of Washington State.

**Research Participation:**

I understand I am being asked to participate in this study in the following way: Respond to in-person and/or telephone interview questions.

I further understand that my involvement is voluntary and I may refuse to participate or withdraw my participation at any time without any negative consequences. I have been advised that I may request a copy of the final research study report. Should I request a copy, I understand I may be asked to pay the costs of photocopying and mailing.

**Confidentiality**
I understand that participation is confidential to the limits of applicable privacy laws. No one except the student researcher, her supervisor and Program Coordinator (or Program Director) will be allowed to view any information or data collected whether by questionnaire, interview, and /or other means. If the student researcher’s cooperating classroom teacher will also have access to raw data, the following box will be checked. All data (the questionnaires, audio/video tapes, typed records of the interview, interview notes, informed consent forms, computer discs, any backup of computer discs and any other storage devices) are kept locked and password protected by the researcher. The research data will be stored for five (5) years. At the end of that time, all data will be permanently destroyed. The published results of the study will contain data from which no individual participant can be identified.

Signatures

I have carefully reviewed and understand this consent form. I understand the description of the research protocol and consent process provided to me by the researcher. My signature on this form indicates that I understand to my satisfaction the information provided to me about my participation in this research project. My signature also indicates that I been apprised of the potential risks involved in my participation. Lastly, my signature indicates that I agree to participate as a research subject.

My consent to participate does not waive my legal rights nor release the researchers, sponsors, and/or City University of Seattle from their legal and professional responsibilities with respect to this research. I understand I am free to withdraw from this research project at any time. I further understand that I may ask for clarification or new information throughout my participation at any time during this research.

Participant’s Name: ________________________________________

Please Print

Participant’s Signature: ___________________________ Date: ______________

Researcher’s Name: Mary Bethune

Researcher’s Signature: ___________________________ Date: ______________

If I have any questions about this research, I have been advised to contact the researcher and/or her supervisor, as listed on page one of this consent form.

Should I have any concerns about the way I have been treated as a research participant, I may contact the following individual(s):

Dr. Joel Domingo, Program Director, City University of Seattle, at
Address: 521 Wall Street, Suite 100, Seattle, WA 98121
Phone: 1-888-422-4898
Email: jdomingo@cityuniversity.edu