KNOWLEDGE RETENTION AND TRANSFER IN AN IT COMMUNITY OF PRACTICE: LEADER AND FORMER PARTICIPANT PERSPECTIVES

by

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ABSTRACT

The purpose of this qualitative phenomenological study which evolved into a collective case study was to gain a deeper understanding of knowledge retention and transfer practices within an information technology (IT) interorganizational community of practice. The study involved analyzing structured interview responses from six trainee, seven leaders and two government leader participants in the Bermuda-based program who had experienced knowledge retention and transfer within the social environment, as well as an analysis of relevant documentation to identify emergent themes. Eight themes identified through the data were learner, role model, relevance, learning environment, communication, opportunity, networking, and modeling. The research revealed many elements in the interorganizational IT community of practice contributed to knowledge retention and transfer, including the environment, differing perspectives of those involved, personal development of participants, the career boost perceived by participants, and the complexity of the IT industry. The findings include suggestions for expanding and strengthening the community of practice through partnerships with educational institutions, IT organizations, and alumni of the program, in addition to program enhancements and the replication of the program in other jurisdictions, which might lead to enhancing the value of participation in the IT interorganizational community of practice to the constituent groups involved.

DEDICATION

To my husband, Aidan, for supporting me in this endeavor every step of the way. Whenever life became a rollercoaster and I took my eyes off the goal, he would remind me of the goal that I had set for myself during my first year as an undergraduate 20 years ago. I would not have completed this work without his love, encouragement, and occasional prodding

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Introduction

Change will occur in the working demographic as baby boomers retire (Macon & Artley, 2009; McMullin, Duerden Comeau, & Jovic, 2007; Rizzuto, 2011), although the current economic uncertainty might result in a delay of the overall impact of the retirements on organizations (Goda, Shoven, & Slavov, 2011). Even though some individuals might delay retirement, leaders must continue to develop and implement strategies and practices to retain and then transfer the knowledge held by the future retirees to younger generations (Calo, 2008; Haarmann, Kahlert, Langenberg, & Müller-Prothmann, 2009).

Information technology (IT) organizations are places where the challenges of the loss of older workers might be keenly felt (Drucker, 2002; Joseph, Ng, Koh, & Ang, 2007). With a reliance on IT knowledge workers, other elements such as outsourcing to lower cost jurisdictions and the loss of middle management in many organizations, knowledge retention and transfer opportunities are often lost as IT knowledge workers leave many organizations (DeLong, 2004; Qu, Pinsonneault, & Oh, 2011). Such challenges get worse because incoming IT workers often do not have the exact skill set desired (Gallagher, Kaiser, Simon, Beath, & Goles, 2010). Organizational leaders face higher costs to recruit, train, and retain IT knowledge workers (Grossman & Rossi-Hansberg, 2007; Qu et al., 2011).

The world is increasingly becoming an information society (Drucker, 2002; Gomez-Barroso, Feijoo, & Karnitis, 2008). Leaders structure and develop strategies to leverage the benefits of the knowledge held by workers (Almahamid, Awwad, &

McAdams, 2010; Caraballo, Mesa, & Herrera, 2009). Learning is important to the culture of these organizations, and knowledge is the intellectual capital developed and used to cope with changing environments (Drucker, 2002; Irani, Sharif, & Love, 2009). In IT organizations, many technical tools and training methods allow for the retention and transfer of explicit knowledge (Acuna, 2010; Rothwell, 2011). Tacit, experiential knowledge is not easily shared, and codification, articulation, or specification and a beneficial organizational culture are necessary to convert tacit into explicit knowledge (Acuna, 2010; Hakanson, 2007; Thoenig & Verdier, 2010).

This chapter contains a background on knowledge retention and transfer and on the role of communities of practice to support these knowledge activities. The problem involving the complex nature of knowledge retention and transfer was the basis of the purpose of the research. The chapter includes an introduction to knowledge retention and transfer through a community of practice. Also examined are the significance and nature of the study, as well as the research questions and theoretical framework.

Background of the Problem

Exploring knowledge retention and transfer within IT organizations involves numerous challenges because the definitions of retention and transfer vary (Hokanson, Sosa-Fey, & Vinaja, 2011; Salem, 2007). In the broadest sense, knowledge retention involves capturing, sharing, and using knowledge within an organization (DeLong, 2004; Hokanson et al., 2011) and knowledge transfer is the movement of knowledge from one place to another within an organization (Broucker, 2010; DeLong, 2004). Defining both knowledge retention and transfer is difficult in relation to explicit and tacit knowledge practices (Balconi, Pozzali, & Viale, 2007; Peet, Walsh, Sober, & Rawak, 2010; Smith,

McKeen, & Singh, 2007). Some of the challenge is due to denotation, as distinguishing between data, information, and knowledge may be difficult (Delen & Al-Hawamdeh, 2009; Goth, 2010; Senapathi, 2011). Although researchers have studied the concept of knowledge management since the 1960s, determining the value of knowledge and the value of knowledge retention and transfer in organizations is more recent (Acuna, 2010; Drucker, 2002; Mládková, 2011).

The focus of the current study often causes differences in perception. Maier and Hädrich's (2006) overview of a knowledge management system included knowledge management processes such as capture, storage, and transfer. Such a perspective lends itself to higher level acquisition and deployment processes that might help to meet organizational goals. Maier and Hädrich's approach differs from the focus of the Comité Européen de Normalisation, where the focus was on individual and collective knowledge resources (Sarmento, 2005).

Although a common thread existed in the many perceptions of knowledge and knowledge management, knowledge retention appears to have many entry points for researchers. DeLong (2004) considered knowledge retention activities to include knowledge acquisition, storage, and retrieval, which includes social and structural processes and facilities. Juliano (2006) contended many organizational leaders develop programs around one-way, one-time knowledge transfer and not continuous knowledge transfer, whereas Nelson and McCann (2010) focused on strategic knowledge, learning culture and human resources, and the benefit to business value.

Knowledge must be both accessible to those who need it and protected so only authorized users have access to it (Carraway, 2011; Cross, 2010; Hinze & Electronic,

2008; Salem, 2007; Tong, 2010). Interpretations of the value assigned to the management of knowledge by leaders of organizations include a means to generate revenue, a mechanism for industry advantage through intangible actions such as creativity for innovation, or a method to access organizational knowledge (Abzari & Abbasi, 2011; Amin & Roberts, 2008; Bagdoniene & Kazakeviciute, 2009; Davenport, 2011; DeLong, 2004; Donate & Guadamillas, 2010). The expertise of professionals is often available to others in some way through formal knowledge management programs because the knowledge has been captured, stored, and made transferable (Baker-Eveleth, Chung, Eveleth, & O'Neill, 2011; DeLong & Davenport, 2003).

As baby boomers begin to retire, the potential for the significant loss of knowledge in coming years appears to be encouraging leaders across many industries to consider their options in identifying ways to retain knowledge for transfer to other workers (DeLong, 2004; Macon & Artley, 2009; Rizzuto, 2011). In the IT sector, because of the need to update skills constantly and the presence of specialists, talent management and succession planning are important considerations for IT leaders (Davenport, Harris, & Shapiro, 2010; Mastracci, 2009; Rothwell, 2011; Shaheen, 2010). If leaders consider knowledge as an individual creation that needs changing in some way to become valuable to the organization, then IT leaders must provide the opportunity for knowledge transfer activities such as tacit knowledge transformation through mentoring and explicit knowledge capture and transfer through documentation and training (Acuna, 2010; Mládková, 2011; Rothwell, 2011).

In environments where organizations often compete for knowledge workers, it is important to manage the knowledge that workers hold throughout their time within the

organization (Drucker, 2002; Rothwell, 2011). The workers and knowledge must be leveraged to benefit organizational knowledge (Abzari & Abbasi, 2011; D-N. Chen, Liang, & Lin, 2010) and the workers' knowledge must be enhanced in this relationship (Peet et al., 2010). If a knowledge worker and an organization part company, then both would theoretically benefit upon parting (Drucker, 2009; Kraimer, Seibert, Wayne, Liden, & Bravo, 2011; Wingreen, LeRouge, & Blanton, 2009).

The cost of losing knowledge is greater if that knowledge is not easy to replace (Carraway, 2011; McKeown, 2011). In the IT discipline, because technology changes rapidly, IT knowledge workers continue to develop their skill, often in specialist areas (A. N. K. Chen, Hwang, & Raghu, 2010; Drucker, 2002; Gallagher et al., 2010). IT knowledge workers often join groups that include others with skill in the same area (MacDonald, 2008). Participating IT knowledge workers might come from different organizations and industries, and those who become a part of these communities of practice benefit from the development opportunities and discussions that take place (Wagenaar & Hulsebosch, 2008; White, 2010). The communities of practice might even be a beneficial environment in which knowledge retention and transfer can take place.

In IT organizations, leaders pay increasing attention to knowledge retention and transfer between those working within the discipline (Gallagher et al., 2010; Haarmann et al., 2009). Technical solutions and training programs are common tactics used by IT leaders when developing retention and transfer strategies (Senapathi, 2011; Wingreen et al., 2009). Through talent management and succession planning, deciding how to best retain and transfer knowledge for future use requires that leaders pay attention to their organizational culture, IT knowledge worker development, social interaction both

internally and through communities of practice, operational needs, and organizational processes (Jensen & Szulanski, 2007; Rothwell, 2011).

Statement of the Problem

The problem addressed in the study was the lack of innovative knowledge retention and transfer strategies within the IT discipline. In the United States, 10,000 baby boomers, those born between 1946 and 1964, are becoming eligible for retirement every day (Laing, Poitier, Ferguson, Carraher, & Ford, 2009). In 2010, 40 million adults were over the age of 65, and this number will increase to 72 million by 2030 (Landau, 2010). In an environment where 33% of IT jobs are at risk because skilled IT knowledge workers have retired or are about to retire, knowledge retention and transfer practices are necessary but are often lacking (Buckley & Giannakopoulos, 2011; Carraway, 2011; Frey, 2010).

Due to outsourcing, opportunities for growth might cause IT knowledge workers to change organizations to access growth prospects (Qu et al., 2011; Tambe & Hitt, 2010; Whitaker, Mithas, & Krishnan, 2010). According to McKeown (2011), hiring and training costs 300 to 700 times a worker's hourly wage. IT professionals often change employers within 5 years (Brooks, Miller, & Korzaan, 2009). Replacing a departing professional can average 12 to 40% of a company's pretax income (Finnegan, 2010). Turnover costs include lost productivity, as well as exit, vacancy, and hiring processes (Finnegan, 2010; Kraimer et al., 2011). If the professional hired does not have the desired skill set, it will take additional training and time to bring the professional to a contributing level (Gallagher et al., 2010), which makes knowledge retention and transfer a major concern for IT organizations.

The goal of this study was to gain a better understanding of how an interorganizational community of practice provides IT leaders a knowledge retention and transfer with the opportunity to identify IT talent with the aptitude and leadership potential that might benefit their respective organizations in the future. Researchers often study communities of practice from the perspectives of a space for knowledge sharing among educators and professionals (Acuna, 2010; Baker-Eveleth et al., 2011; Buckley & Giannakopoulos, 2011; Enthoven & de Bruijn, 2010; Seaman, 2008), to the creation of a virtual space for professional development (Amin & Roberts, 2008; de Melo Braga, Santos, Ferreira, & Dantas, 2010; Hanewald & Gesthuizen, 2009; MacDonald, 2008; Mackey & Evans, 2011; Triggs & John, 2004; White, 2010), and to the culture necessary within organizations to share knowledge during projects (Kayworth & Leidner, 2004; Kimble & Bourdon, 2008; Lank, Randell-Khan, Rosenbaum, & Tate, 2008; Østerlund & Carlile, 2005; Probst & Borzillo, 2008; Schimmel & Muntslag, 2009; Yeo, 2008). The literature did not contain detail on using communities of practice to identify and develop future leaders, specifically in an environment where entry-level positions are difficult to obtain due to the need for specialized IT skill-sets. An understanding of how and why the community of practice is appropriate for knowledge retention and transfer to trainees who often do not have a relationship with the member companies emerged from the reflections and stories of those who have experienced such an innovative environment.

The need for IT professionals continues to increase in the information society and the loss of IT knowledge workers' knowledge is both an organizational and an industry-wide problem (Buckley & Giannakopoulos, 2011; Hokanson et al., 2011). IT leaders require insight into what limits knowledge retention and transfer and what can be done to

develop successful practices, perhaps through the use of interorganizational means. The current qualitative phenomenological study involved exploring the lived experiences of IT leaders and trainees of knowledge retention and transfer practices within an IT interorganizational community of practice created to benefit participating IT organizations with access to IT knowledge workers. Participants included IT leaders and former IT trainees from participant organizations in the IT interorganizational community of practice in Bermuda. The participants shared their stories through interviews and provided their experiences with knowledge retention and transfer practices within the community of practice.

Purpose of the Study

The purpose of the qualitative phenomenological study was to gain a deeper understanding of knowledge retention and transfer practices within an IT interorganizational community of practice. Economic and demographic changes might affect organizational access to the knowledge of IT knowledge workers (Hokanson et al., 2011; Tambe & Hitt, 2010). Leaders of IT organizations need strategies to gain access to the knowledge that is essential to their operations (Drucker, 2002; Rothwell, 2011).The study involved exploring participant experiences and uncovering themes relating to improving knowledge retention and transfer in IT organizations (Creswell, 2007).

The study included a phenomenological approach to analyze data gathered through in-depth interviews (Banner, 2010). Ten IT business leaders and ten IT former trainees, all of whom had been a part of an IT interorganizational community of practice created to benefit participating organizations with access to IT knowledge workers, were targeted to participate in interviews. The study included a purposive sampling technique

to select the participants. Focusing on the life experiences of the participants revealed how an IT interorganizational community of practice influenced knowledge retention and transfer practices for participating IT organizations through identifying IT resources that have the aptitude for greater development within their organization. The phenomenological study involved engaging the small number of participants in a thorough and compelling discourse to understand their lived experience (Mason, 2010).

Significance of the Study

The study of the participant experiences in an interorganizational IT community of practice to understand knowledge retention and transfer practices is significant because accessing IT worker tacit knowledge is challenging (Acuna, 2010; Senapathi, 2011). Innovative practices may be developed through an interorganizational community of practice because the participants formally or informally share concerns, problems, and experiences by interacting regularly and working toward a shared purpose (Enthoven & de Bruijn, 2010; van Baalen, Bloemhof-Ruwaard, & van Heck, 2005; Wenger, McDermott, & Snyder, 2002). Communities of practice might also foster learning and understanding by providing an environment where innovation and focus in a particular area provide possibilities for sharing both explicit and tacit knowledge (Li et al., 2009; Seaman, 2008).

A community can develop over time when individuals work and interact with others, due to the shared purpose of those involved (Li et al., 2009; Wenger, 2005). Communities of practice may be inter- or intraorganizational, can involve knowledge-creating and knowledge-sharing activities, and often develop around a certain practice (Buckley & Giannakopoulos, 2011; Kopcha, 2010). The results of the study include

critical factors for accessing IT workers' knowledge in partnership with other organizations, as well as proven practices for knowledge retention and transfer practices that can be taken from the interorganizational community of practice and used within IT organizations.

Significance of Study to Leadership

A leader's primary role involves coping with change (Bevan, 2011; Cloud, 2010; Kotter, 1999). As business environments become increasingly chaotic and competitive, leaders need the adaptive capacity to set the direction of their respective organizations and to empower professionals to challenge current practices and create new ways of doing business (Bennis, 2009; B. Davies & Davies, 2010). Knowledge is critical to the operation of the entire organization (Carraway, 2011; Lichtenthaler & Lichtenthaler, 2009; Salem, 2007). In information societies, leaders must be innovative in developing environments, whether within their organizations or through external structures for knowledge creation, storage, and sharing (Drucker, 2002; Mansell, 2010). Such environments give leaders a sound foundation to navigate changing business environments (Bevan, 2011; Salem, 2007).

The result of the study might assist in enhancing knowledge retention and transfer strategies within IT organizations and encourage greater interorganizational collaboration. Jastroch and Marlowe (2010) found codification of collaborative knowledge must take place before transfer. A study of using an interorganizational IT community of practice that includes practices to enable knowledge retention and transfer might help to identify additional processes and structures for successful knowledge retention and transfer within a leader's organization (du Plessis, 2008; Jastroch &

Marlowe, 2010). By approving the likelihood of knowledge retention and transfer, the results of the study might lead to increased organizational success in storing and sharing knowledge.

Nature of the Study

Overview of the research method. A qualitative research methodology is appropriate for exploring areas for which limited information is available about a particular phenomenon (Creswell, 2007). The use of a community of practice for knowledge retention and transfer practices with trainees who might not end up working for those who are sharing the valuable IT information is a complex and unique circumstance that provides an opportunity to collect and explore themes from participant experiences. The qualitative methodology is the most appropriate for making sense of a phenomenon based on the meanings participants provide during the data collection process (Nurit & Michal, 2003).

A quantitative methodology would not have been appropriate for the study because it is most appropriate for examining the relationship between variables (Dobrovolny & Fuentes, 2008). Quantitative methodology helps to answer why, whereas the qualitative method answers how or what questions. The current study involved exploring experiences, not explanations of trends. A quantitative methodology would have been inappropriate to develop an understanding based on the detailed exploration of knowledge retention and transfer in the community of practice.

A mixed methodology might have been more appropriate than a quantitative method for the study; however, the shift in focus from the participant experiences to the quantification of variables might have made it difficult to provide the depth of

understanding of the phenomena (Nurit & Michal, 2003). Goel and Rastogi (2011) showed correlations between human capital creation and knowledge management in the Indian IT industry using a mixed methodology, but the focus was only on acquisition and training.

Overview of the study design appropriateness. A phenomenological design is best suited for a study when it provides an account of the significance applied to the participants' experiences (Nurit & Michal, 2003). The details of the individual experiences in the current study led to examining and understanding how various elements of the experiences interact mutually (Bird, 2009). Participants can determine their level of input and have the ability to affect the direction and extent of the discussion pertaining to their experiences with knowledge retention and transfer practices (Banner, 2010).

The study design was approached with openness understanding that qualitative inquiry has an evolutionary nature (Glesne & Peshkin, 1992; Guba & Lincoln, 1981). For example, from a phenomenological design perspective the examination of multiple participant experiences would allow for the investigation of the structures formed through social interactions (Schutz, 1967). On the other hand, from a collective case study perspective, shared commonalities between trainee and leader experiences might allow for an understanding of the phenomena from different perspectives (Berg, 2009; Yin, 2009).

The qualitative phenomenological study was to include interviews with ten IT business leaders and ten former IT trainees, all of whom were a part of an IT interorganizational community of practice. To allow for time constraints, participants

were to respond by a face-to-face or telephone interview. Participants answered open-ended questions that led to further questions that related to their individual experiences with knowledge retention and transfer within the culture of the IT interorganizational community of practice (Banner, 2010). The interview questions were to be distributed and responses gathered within a 2-week period.

Research Questions

Knowledge retention often becomes the focus of organizational leaders when professionals leave the organization either to pursue other opportunities or to retire (DeLong, 2004; DeLong & Davenport, 2003; Juliano, 2006; Rizzuto, 2011). Due to the unique and often critical nature of individual knowledge to organizational processes and operations, leaders increasingly attempt to retain employee knowledge through retention strategies and practices (Buckley & Giannakopoulos, 2011). The level of effort put into knowledge retention, and the methods by which knowledge might be retained, varies among departments and organizations. In some organizations, the focus might be on a training and development solution to ensure the proper transfer of required knowledge, whereas in others the focus might be on business process and technological solutions to capture best practices with the intention to share them in times of need (Calo, 2008; Gallagher et al., 2010; Kluge & Krings, 2008). The two research questions and their related sub-questions for the study included a focus on identified issues related to knowledge retention and transfer.

R1: What are the lived experiences of participants regarding knowledge retention and transfer in the interorganizational community of practice?

R1a: What are the participants' experience of leadership knowledge retention and transfer in the interorganizational community of practice?

R1b: What are the participant experiences of networking within the interorganizational community of practice?

R2: What are the experiences of the participants upon leaving the community of practice?

R2a: What are the benefits and difficulties as experienced by participants?

Theoretical Framework

Knowledge retention and transfer are increasing in importance in many organizations (DeLong, 2007; Jeppesen & Laursen, 2009). The sources of the success of such practices are the participating professionals and a supportive organizational culture (DeLong & Davenport, 2003; "Leveraging HR," 2009). The purpose of the research study was to explore professionals' perceptions, thoughts, and ideas about knowledge retention and transfer and how to use a community of practice in the implementation of knowledge retention and transfer practices. To understand knowledge retention and transfer in the environment of a community of practice, understanding the various perspectives associated with the problem of the potential loss of knowledge in organizations is necessary (Buckley & Giannakopoulos, 2011; Hokanson et al., 2011). Understanding the value of IT knowledge workers to organizational success provides the background to comprehend the challenges faced within the IT organizational context.

Social learning theory. Social learning theory (Wenger, 2005) was the basis for the study of knowledge retention and transfer practices. The social theory of learning in the context of experience and social interactions historically indicated knowledge

generation, sharing, transfer, and retention involve four components. Identity comprises the concept that learning changes people (Goel, Johnson, Junglas, & Ives, 2010). Practice requires learning through doing, which entails sharing resources and perspectives and embodies mutual action (Becerra, Lunnan, & Huemer, 2008; Wenger, 2005). Learning through experience creates meaning. Community requires social configurations that allow individuals to belong, create, and share what they have learned (Baker-Eveleth et al., 2011; Li et al., 2009).

The basis of the theoretical framework for the current study was the principles of social learning theory, particularly in the structures of communities of practice (Enthoven & de Bruijn, 2010; Mitra, 2008). Experience and practice were the focus of the framework because in addressing the problem of knowledge loss, organizational leaders wish to retain and transfer these elements as effectively as possible between professionals (Bettoni & Eggs, 2010). The beliefs of professionals within a community, the ability to assess the knowledge retention and transfer problem, social interactions, and a basis in practical literature-based theory affect the action and reflective steps taken by leaders (Bettoni & Eggs, 2010; Kopcha, 2010; White, 2010). Leaders might then alter the initial concepts through learning (Allame, Nouri, Tavakoli, & Shokrani, 2011; Wenger, 2005). Experience and practice develop while the elements that influence action and reflection also change through new experiences and learning (Bettoni & Eggs, 2010; Enthoven & de Bruijn, 2010; Wenger, 2005). Member organizations might adopt successful activities in the community of practice in their own operations (Baker-Eveleth et al., 2011; Li et al., 2009).

Communities of practice provide an avenue for knowledge retention and transfer in the broader view of the social theory of learning (Wenger, 2005). Organizational leaders might use communities of practice to enhance knowledge exchange and enable organizational retention of such knowledge (Acuna, 2010; Haarmann et al., 2009). Communities of practices are mechanisms that leaders might use as innovative means to share both explicit and tacit knowledge (Hakanson, 2007; Thoenig & Verdier, 2010).

Whether due to turnover, retirement, or otherwise, organizational leaders are increasingly losing valuable knowledge as individuals leave organizations and new professionals who do not have the same experience take their place (DeLong, 2004; Finnegan, 2010; Juliano, 2006). Communities of practice are mechanisms that organizational leaders can use to mitigate such situations and provide access to intellectual capital (Baker-Eveleth et al., 2011; Wenger, 2005). Stewart (1999) discussed intellectual capital as "formalized, captured and leveraged knowledge" (p. 68) but also as "knowledge in the context of strategy (p. 74) and soft or tacit knowledge. Intellectual capital is the most important asset of an organization that communities of practice can enhance (Acuna, 2010; Davenport, 2011; Stewart, 1999; Wenger, 2005). The linkage to knowledge retention and transfer indicates that formalized, captured, and leveraged knowledge has the ability to include lessons learned, knowledge-sharing opportunities, and the environment for creating new knowledge (Salem, 2007; Stewart, 1999).

Study application to theoretical framework. Because of the critical nature of the knowledge retention and transfer issue, the qualitative phenomenological study contains additional information on what changes might be beneficial to enhance knowledge retention and transfer practices (DeLong, 2004). The method allows for

understanding current practices in a manner that involves participants' lived experiences (Nurit & Michal, 2003). Social phenomenology was beneficial for the study because elements experienced by participants might be both the basis for and the result of participant interaction and development (Kim & Berard, 2009). Social phenomenology is a process that involves developing both the meaning and the spirit of the experience.

Knowledge retention requires social interaction and *ba*, a term used for shared space for knowledge creation and evolution (Nonaka & Nishiguchi, 2001; Nonaka & von Krogh, 2009). Knowledge indicates a level of competence, and what a person knows indicates engagement in an aspect of society (Cloud, 2010; Salem, 2007). The process of creating meaning is a result of learning and experiencing the social dimensions of the world (Amiri, Jandghi, Alvani, Hosnavi, & Ramezan, 2010; Wenger, 2005). Meaning makes knowledge retention critical to organizations because professionals create new knowledge through their work experiences, yet it is difficult to capture and transfer meaning to others (DeLong, 2004; Juliano, 2006).

An examination of knowledge retention and transfer as a dynamic process is lacking in the knowledge management literature (DeLong & Davenport, 2003). By addressing the pressing needs of organizations that rely on IT worker knowledge, a capacity for organizational agility might exist (Almahamid et al., 2010). The study results include information on how leaders of IT organizations can develop knowledge retention and transfer practices using interorganizational communities of practice through an understanding of knowledge retention planning decisions and how social interaction aids in goal achievement (Baker-Eveleth et al., 2011; Lieberman & Miller, 2011).

Definitions of Terms

There are many topics and concepts related to this study. The terms included below are defined to provide increased understanding for the reader. The definitions are specific to this field of study and are supported by relevant sources.

1. *Articulation* is the process where tacit knowledge and skills are made explicit, but is an issue because tacit knowledge cannot be explained fully by verbal means (Hakanson, 2007).
2. *Ba* is a shared space for knowledge formation, collaboration, and utilization involving location, people, time, relationship, and thought. Ba allows for personal knowledge conversion, which involves giving an individual the ability to surpass his or her own perspective (Nonaka & Nishiguchi, 2001).
3. *Codification* means a researcher transforms individual knowledge in a way that makes it more understandable by the group (Acuna, 2010).
4. *Communities of practice* are inter- or intraorganizational and involve knowledge-creation or knowledge-sharing activities developed around a particular practice area (Buckley & Giannakopoulos, 2011). Learning is an action of membership in a community because learning is socially based, and knowledge is incorporated in social relations, experience, and expertise in the community (Wenger, 2005).
5. *Explicit knowledge* is knowledge that can be expressed as codified language (Mládková, 2011).
6. *Intellectual capital* is formalized, captured, and leveraged knowledge in the context of strategy and often involves soft or tacit knowledge (Stewart, 1999).

7. *Knowledge* is expertise or recognizing a course of action due to experience or learning (Bejinaru & Iordache, 2011), leveraging beliefs and commitments in the enhancement of organizational actions (D-N. Chen et al., 2010).
8. *Knowledge creation* is information combined with the experiences and skills of individuals (Ransbotham & Kane, 2011).
9. *Knowledge deployment* is the transfer of skills and experiences to enhance knowledge at various levels (Nonaka & Nishiguchi, 2001).
10. *Knowledge management* is a broad range of activities focusing on the creation, sharing, management, and enhancement of knowledge (Maier & Hädrich, 2006).
11. *Knowledge retention* is the methods by which organizations capture, share, and leverage knowledge held by employees (DeLong & Davenport, 2003).
12. *Knowledge sharing* is the process of exchanging information, skills, or expertise (DeLong, 2004).
13. *Knowledge transfer* is the process of moving knowledge from one part of an organization to another (Nonaka & Nishiguchi, 2001).
14. *Knowledge workers* develop or use knowledge (Davenport, 2011).
15. *Learning organization* is the capacity for organizational leaders to create the results they desire through workers expanding their ability to learn together (Bejinaru & Iordache, 2011; Senge, 2006).
16. *Succession planning* involves identifying and developing professionals for leadership positions with an organization (Rothwell, 2011).
17. *Tacit knowledge* is knowledge achieved through the experience of living in the world (Nonaka & Nishiguchi, 2001).

Assumptions

The primary assumption was that knowledge retention and knowledge transfer takes place in IT interorganizational communities of practice. These knowledge events occur even if formal knowledge terminology is not used. These assumptions were important to the study because the transfer and retention of knowledge within many organizations often ensue through strategies devised by organizational leadership (Kim, 2010).

For this study, the interorganizational community of practice includes subjects from both the leadership and trainee groups. Participants were understood to have direct experience with knowledge retention and transfer practices through interactions within the community of practice. Trainee participants communicated through the interview process how their experiences within the community of practice affected their ability to retain and employ the learned knowledge practices within their organizations. Leadership participants explored their knowledge transfer experiences and how the trainees brought value to their organizations and the broader technology community.

These assumptions were important because the trainee participants required relevant skills to bring value to their employment. On the other hand, the leader participants must provide a context for sharing in a business environment where there is frequent turnover (Finnegan, 2010). The final assumption was the participants would be truthful in the answers provided during the interview process.

Limitations

Participation was limited to IT professionals who were part of an IT interorganizational community of practice. A criterion sample that represented the

trainee and leader members from the interorganizational community of practice provided the population for the study. A random sample of participants in the technology community would not have worked in the study because participants needed to have experienced knowledge retention and knowledge transfer practices within the community of practice. While this limited the number of subjects available for the study, it also ensured that the data collected would be relevant to the problem under investigation.

The selection of the phenomenological research design was a limitation of participant validity. Interviews were used as the primary source of data collection. The choice of this research design and data collection method made it difficult for the researcher to remain detached from participants and the outcome of the phenomenological study (Chenail, 2011). Due to the researcher's involvement in the IT interorganizational community of practice, piloting the interview questions and reflective journaling were methods used to mitigate bias (Riege, 2003).

The availability of participants, the financial resources available for the study phases, and the time allotted to complete the study limited the findings. All participation was voluntary, with the assumption that participants had an interest in exploring the value that knowledge retention and transfer practices brought to their community of practice. Such participation indicated a level of bias by the participants and which could have an effect on the perceived use of knowledge retention processes within the IT interorganizational community of practice. The researcher ensured that they reached out to the population multiple times to encourage subjects to provide a broader range of experiences to enhance the data collected.

Data collection included interviews, which are interactive, qualitative modes of inquiry (Banner, 2010). The questions were open ended, encouraging participants to explore their experiences through the interaction with the researcher (Berg, 2009). Follow-up questions and rewording of questions were also used to encourage participants to examine their participation in the community of practice.

One of the goals of effective knowledge retention is to protect critical knowledge that might be lost, particularly knowledge related to the expertise of highly skilled knowledge workers (DeLong, 2004; Drucker, 2002). This goal reinforced the beneficial nature of the qualitative research method and the phenomenological design, as the aim was to understand the lived experience of the participants (Nurit & Michal, 2003). The participants were provided an avenue through which they could delve into the meaning they had ascribed to their community of practice experiences. The researcher was an important tool to guide them through their self-examination of their participation.

Summary

The retention and transfer of knowledge within IT organizations increases in importance as changes in the economic and demographic environment affect access to the knowledge of IT knowledge workers (Hokanson et al., 2011; Tambe & Hitt, 2010). Knowledge plays an important role in the competitive advantage of IT organizations' performance (DeLong & Davenport, 2003; Singh, 2011), making retention and transfer valuable assets. Knowledge retention and transfer involve numerous practices, including capturing, sharing, and leveraging knowledge (DeLong, 2004; Hokanson et al., 2011). The extent to which organizations plan for and implement such practices varies (Juliano, 2006). Knowledge-retention processes often receive attention due to an unanticipated

loss of knowledge (Buckley & Giannakopoulos, 2011; Hokanson et al., 2011). The study contributes to knowledge retention, knowledge transfer, and community of practice literature. Outcomes might include improved organizational agility. Chapter 2 contains germinal, relevant highlights of recent research related to knowledge, knowledge management, knowledge retention, knowledge transfer, communities of practice, and IT sector considerations. The review also includes a discussion on techniques used by researchers studying knowledge retention and transfer through communities of practice.

Chapter 2

Literature Review

The purpose of the qualitative phenomenological study was to gain a deeper understanding of knowledge retention and transfer practices within an IT interorganizational community of practice. The objective of the study was to explore participant experiences and uncover themes relating to improving knowledge retention and transfer in IT organizations (Creswell, 2007). Research into the topics of knowledge, knowledge management, knowledge sharing, communities of practice, and organizational agility was available from scholarly resources. Understanding how using an interorganizational community of practice provides IT leaders a knowledge retention and transfer opportunity to identify IT talent with the aptitude and leadership potential that might benefit their respective organizations in the future requires a deeper social and cultural understanding of the phenomenon (Li et al., 2009; Schutz, 1967). As businesses around the world continue to need skilled IT talent, demographic and economic issues challenge organizational leaders as they work to retain and transfer specialist IT knowledge (Hokanson et al., 2011).

This chapter contains a review of literature on knowledge, tacit knowledge, explicit knowledge, knowledge management, knowledge sharing, knowledge retention, knowledge transfer, communities of practice, and organizational agility. Also included in the review is leaders' use of communities of practice to enhance knowledge sharing by creating and enhancing a culture of trust (Buckley & Giannakopoulos, 2011). As discussed by Senge (2006), elements beneficial to organizational learning are explored, where leaders can rely upon and access workers' dedication and aptitude to learn. An

analysis of the effects of knowledge retention and transfer within communities of practice reveals how the combination might benefit organizational agility. Leaders of IT organizations need strategies to have access to the knowledge that is essential to their operations (Drucker, 2002; Rothwell, 2011).

Knowledge workers are both a vital resource and important team members in an information society (Drucker, 2002). IT knowledge workers use knowledge to support best practices and create knowledge as they innovate and help to evolve their practices (Allame et al., 2011). The important role of IT knowledge workers in organizations, and the skills and experiences they bring, indicates a great reliance on the tacit knowledge held by these individuals (Rizzuto, 2011).

Title Searches, Articles, Research Documents, and Journals

The review of the literature for the qualitative phenomenological study entailed more than 443 articles, books, and journals on the topics related to the problem, purpose, and research methodology. Scholarly journals were the focus of the library document searches. Additional specific material searches resulted from bibliography reviews of articles to identify germinal works.

The literature review includes references from 21 books and 212 articles. The literature review includes 85% peer-reviewed articles published from 2007 to 2011. Studies on knowledge sharing, communities of practice, and IT industry challenges were beneficial in developing the study.

The primary focus of the articles was key search criteria such as knowledge retention, knowledge sharing, knowledge transfer, knowledge workers, IT workers, organizational learning, and communities of practice. Additional searches for the works

of well-known authors included Nonaka, Drucker, DeLong, Wenger, Stewart, and Davenport. Published books were explored for relevant and germinal material. The major databases used for the literature review included EBSCOhost, ProQuest, and the University of Phoenix thesis and dissertation database.

Historical Overview

Knowledge is critical to the operation of many organizations (Irani et al., 2009; Rao, Borg, & Klein, 2008). In professional IT services organizations where IT knowledge workers are the primary source of organizational knowledge, that knowledge is a product offered by the organization to clients (Davenport, 2011; Martín-de-Castro, Delgado-Verde, López-Sáez, & Navas-López, 2011). For many IT knowledge workers, leveraging, sharing, and creating knowledge involves having access to information, collaboration, innovation, and competition (Drucker, 2002; Hamburg, 2011; Hemmasi & Csanda, 2009).

The reliance on IT knowledge workers, and the skills and experiences these workers bring from their continued professional development and project experience, indicates that leaders believe it is important to convert IT workers' knowledge from tacit into explicit knowledge (Baran & Cagiltay, 2010; Enthoven & de Bruijn, 2010; MacDonald, 2008). Individuals acquire tacit knowledge through the experience of living in the world, and tacit knowledge can be converted into explicit knowledge that can be formally expressed, transferred, and distributed (Nonaka & Takeuchi, 1995; Salleh, 2010). The concept of sharing information is an important part of the integration of an IT knowledge worker into an IT organization and also into the business environment (Davenport & Prusak, 2000; Jeppesen & Laursen, 2009; Ping, 2009).

The conversion of tacit into explicit knowledge is important to organizational leaders. Nonaka and Takeuchi's (2005) *knowledge spiral* is a process of knowledge conversion that includes four steps: socialization, externalization, combination, and internalization (SECI). *Externalization* (or articulation) is often the focus of company leaders as they encourage communicating knowledge held by a worker via spoken and written means (Bratianu, 2010). Only then, through *combination*, might actions such as the development of a procedure or information capture in a database enhance behaviors in other professionals (Lee, Lu, Yang, & Hou, 2010; Nonaka & Takeuchi, 1995). *Socialization* occurs with the sharing of tacit knowledge through apprenticeship or mentoring relationships, and can be difficult, due to cultural differences or other social or organizational issues (Nonaka & Takeuchi, 2005). Both socialization and combination represent the key knowledge transfer processes (Bratianu, 2010).

According to the social theory of learning in relation to SECI, learning-by-doing programs might not be successful within IT organizations where intellectual capital is not factored into the strategic planning behind the effort (Baker-Eveleth et al., 2011). Learning-by-doing programs require strategic planning and customization to the unique needs of the organization and the IT knowledge worker (Davenport, 2011; DeLong, 2004; Wenger, 2005). The final SECI step, *internallization*, proves difficult, because although the distribution of some forms of explicit knowledge is possible, the distribution of others might not be achievable because a professional's tacit knowledge is his or her competitive advantage within an organization (Nonaka & Takeuchi, 1995). In this step, conversion must occur, either from tacit to explicit or from explicit to tacit knowledge (Bratianu, 2010).

IT knowledge workers possess the knowledge that is beneficial to the achievement of organizational goals. From a strategic viewpoint, the knowledge that IT knowledge workers bring into an organization becomes an element that leaders direct to enhance the outputs of the organization (Bejinaru & Iordache, 2011; Davenport, 2011). IT worker knowledge, attitudes, and capacity in combination with organizational elements such as innovation, relationships, and structures enhance the intellectual capital of the organization (Bejinaru & Iordache, 2011; Buckley & Giannakopoulos, 2011). Intellectual capital in a learning organization can result in industry competitive advantage due to excellent organizational performance. Both intellectual capital and a culture of learning are favorable in establishing a dynamic and agile organization (Davenport, 2011).

Knowledge

A familiar definition of knowledge is expertise or the recognition of a course of action due to experience or learning (Carraway, 2011; DeLong 2004). Such a definition might be narrow and does not necessarily embody the full range of information and benefits that can issue from knowledge. Knowledge might appear personal but can be shared and used by others (Tseng & Fan, 2011). Knowledge, when described as a process, includes an interactive component where knowledge creation, sharing, use, and retention have personal and organizational benefits (Abzari & Abbasi, 2011; Nonaka & Takeuchi, 1995). Such definitions provide insight into the various ways relationships might enhance or restrict the flow of knowledge between individuals and within organizations (Kislov, Harvey, & Walshe, 2011).

Knowledge on an organizational level includes the beliefs and commitments of organizational leaders used to enhance the organization's actions (Garcia-Morales, Ruiz-Moreno, & Llorens-Montes, 2007). The organizational perspective aids in providing a distinction between the elements that some confuse when talking about knowledge, namely data, information, and knowledge (Davenport & Prusak, 2000; S. Davies, 2011). Data are unprocessed raw facts, while information consists of data expressed to describe and change perception (Davenport & Prusak, 2000). Knowledge involves the practical use of information, including experiences, values, and context (Davenport & Prusak, 2000; S. Davies, 2011).

The core ideas of germinal writers Mary Parker Follett and Peter Drucker converge on the subject of knowledge. Both considered the importance of organizations developing knowledge from their actions, because that knowledge assists in reducing uncertainty within their respective environments (Drucker, 2002; Follett, 2010; Gehani & Gehani, 2007; Key & Tompson, 2009). Within learning organizations, developing workers is important to creating knowledge (Mel, 2007; Phillips, 2010). Organizational leaders who focus on knowledge creation and sharing have a propensity for collective performance through leveraging common goals, values, a supportive structure, training, and development (Drucker, 2009; Gehani & Gehani, 2007). Both Follett (2010) and Drucker (2002) realized people were their own means of production and were a resource and not a cost. Knowledge might help business leaders to meet organizational goals, but there remains a need to manage information while also increasing the productivity of the actions of individuals using their knowledge within the organization (Mithas, Ramasubbu, & Sambamurthy, 2011).

Leaders do recognize the importance of knowledge and see the value in developing an environment conducive to creating and sharing knowledge, whether through training, team situations, or collaborative information systems (Carleton, 2011; Helm-Stevens, Brown, & Russell, 2011). Organizational processes and strategic intent both have a basis in the knowledge resident in the organization and if accessed effectively, the organizational performance could surpass ordinary capabilities and exhibit new competencies (Bolívar-Ramos, Garcia-Morales, & Mihi-Ramirez, 2011). This enhanced performance is an important benefit to organizations having knowledge workers with significant expertise (Drucker, 2002).

Such discussions on the principles and benefits of knowledge led to a broader definition of knowledge developed by Nonaka and Takeuchi (1995). Ba is a shared space for knowledge formation, collaboration, and utilization that involves physical, mental, or virtual locations and people, time, relationships, and thought (Bratianu, 2010). Ba provides the power for personal knowledge conversion, allowing an individual to surpass his or her own perspective. Ba involves both tacit knowledge and explicit knowledge that interact with each other (Nonaka & von Krogh, 2009).

The four types of ba include originating ba (the sharing of experiences, emotions, and feelings), dialoguing ba (the transfer of skills and experiences into concepts), systematizing ba (collaboration to justify and enhance concepts), and exercising ba (use of formal knowledge in the self-refinement process; Bratianu, 2010). The knowledge created from these types of ba can be shared to enhance knowledge at various levels. Making tacit knowledge explicit is important in most professional environments.

Leaders need to leverage the knowledge from all levels of their organizations, including from the bottom levels where people often learn by doing (Cha, Pingry, & Thatcher, 2008). The creation and dissemination of knowledge throughout an organization allow for the identification of core competencies that ultimately lead to desired results (Bennis, 2009; Drucker, 2009). In recent years, IT tools have allowed organizations to create, store, and share organizational knowledge (Davenport, 2011; S. Davies, 2011; Ransbotham & Kane, 2011). Technology must be recognized as a tool and not as the platform for knowledge creation (Kok, 2010).

The emergent or evolving nature of knowledge is perhaps what makes it so valuable (D-N. Chen et al., 2010). Knowledge takes many forms, from an object (information processing), to an interpretation (internalization), to a process (a dynamic process of change), and to a relationship (with whatever surrounds knowledge; Darvish, Kharaghani, & Selseleh, 2010; Nonaka & Takeuchi, 1995). The emergence of knowledge often comes with an interaction of some sort (Nonaka & Toyama, 2005). The place where knowledge emerges is the mental place where individual and organizational knowledge interact (Bratianu, 2010; Nonaka & Takeuchi, 1995).

Tacit versus explicit knowledge. Knowledge assessment within organizations generally includes the categorization of knowledge as tacit or explicit (Senapathi, 2011). Tacit knowledge is more difficult to access, as it is usually associated with what is in someone's head (Bratianu, 2010; Nonaka & Takeuchi, 1995). Explicit knowledge is the more easily articulated form, whether through information captured in documents or shared orally in a conversation, presentation, or classroom (Jastroch & Marlowe, 2010). Both forms of knowledge include characteristics that enable increased organizational

performance through workers leveraging knowledge, learning, and collaborating with one another (Bolívar-Ramos et al., 2011).

Nonaka and Takeuchi's (1995) *knowledge spiral* illustrated the contrast between tacit and explicit knowledge and how each works within the proper organizational context. The personal quality of tacit knowledge, gained through experience, observed by others through action, and often not openly expressed or stored, makes it hard to transfer and share (Bower & Walker, 2007), but knowledge workers require both explicit and tacit knowledge to do their work (D-N. Chen et al., 2010). Both forms of knowledge, in conjunction with personal characteristics, combine to develop a worker's personal competence. Personal competence, applied in context to a situation, allows knowledge workers to accomplish tasks (Cloud, 2010).

Internal factors such as memory, communication, and motivation and external factors such as organizational culture and leadership style help knowledge workers to convert tacit into explicit knowledge and help that knowledge to be stored and transferred to others (Salleh, 2010). Personal competence is important because knowledge workers do many things with knowledge, including applying, distributing, presenting, analyzing, creating, maintaining, organizing, storing, and procuring it (Irfan, 2009). Knowledge acquired over time is purported to deliver competitive advantage (Goel & Rastogi, 2011). Prior learning also builds the capacity to acquire knowledge (Bower & Walker, 2007; Hamburg, 2011). Leaders therefore employ various tools to manage knowledge, but the tools might differ according to the nature of the knowledge (Martín-de-Castro et al., 2011).

Birkinshaw and Sheehan's (2002) *knowledge life cycle* includes four stages that illustrate the dynamic nature of knowledge. The life cycle model overlays the tacit–explicit knowledge spectrum. *Creation* involves the tacit concepts of abstract ideas, use of judgment, application of theoretical concepts, knowing more than could be told, and knowing how (Birkinshaw & Sheehan, 2002; Bratianu, 2010). *Mobilization* occurs when ideas become more concrete and greater value is developed through the validation of ideas (Birkinshaw & Sheehan, 2002). Codification of tacit knowledge begins as knowledge sharing commences (Acuna, 2010). *Diffusion* describes the next stage where others broadly share and understand the knowledge, individuals make decisions to adopt the knowledge, and implementation and confirmation take place (Birkinshaw & Sheehan, 2002; Roberts, 2010). Finally, *commoditization* is the far end of the explicit side of knowledge, where the concept is now standard practice across society (Birkinshaw & Sheehan, 2002).

The transition from tacit to explicit knowledge becomes the basis for the need for the proper management of knowledge within organizations (Mládková, 2011). Both tacit and explicit knowledge by knowledge workers is easily lost through labor market flows and, as a result, is costly to organizational efficiency over time (DeLong, 2004; Hokanson et al., 2011). The ideal for many organizations is the development of sustainable systems that provide an environment for knowledge workers to access knowledge when they need it; put the knowledge together according to the context of the situation; and allow for collaboration, socialization, and competitive advantage (Carleton, 2011; Carraway, 2011; Hamburg, 2011).

Intellectual capital. The concept of knowledge management involves actions used to gain knowledge from experiences and the application of the knowledge to achieve desired goals (Cabrera, Collins, & Salgado, 2006; Cochran, 2011). The ways leaders manage knowledge in organizations might vary dramatically; however, most leaders agree that intellectual capital includes the knowledge, skill, talent, experience, and education of the workers and the structural components of the organization (Bejinaru & Iordache, 2011). The focus of intellectual capital is measuring various components that together could describe the ways organizational leaders manage and leverage knowledge and competence (Cochran, 2011). The elements that figure into the intellectual capital construct, identified as human, structural, and customer capital, do not necessarily receive equal weight in an organizational assessment (Bejinaru & Iordache, 2011; Chang & Hsieh, 2011).

The codification of intellectual capital into something that is searchable can give more power to structural capital (the nonmobile elements of knowledge such as patents, culture, systems, and inventions; Bejinaru & Iordache, 2011). Such a position might lower leaders' perceived value of human capital (Chang & Hsieh, 2011; Stewart, 1999). The cataloging component of knowledge management, otherwise perceived as a focus of making the tacit into the explicit, might indicate a skewed view of the knowledge contained within an organization (Herrero, Corchado, Sáiz, & Abraham, 2010). The belief that the adoption of a technology tool provides the solution to allow professionals within an organization to leverage intellectual capital is lacking if the tool does not capture the tacit knowledge that would be beneficial to the professionals (Hakanson, 2007; Smith et al., 2007).

Amiri et al. (2010) investigated the relationship between intellectual capital and organizational learning. The outcome was that organizational learning had a positive impact on intellectual capital. Amiri et al. determined different types of knowledge helped in achieving organizational success. The strategic knowledge management framework presented included a knowledge-based strategy and strategic knowledge management.

Intellectual capital includes the spectrum of knowledge, from the codified to the experiential in the context of strategy (Bejinaru & Iordache, 2011; Stewart, 1999). Intellectual capital is an integral component of the knowledge management framework (Amiri et al., 2010) housed within organizations as assets, resources, capabilities, data, wisdom, knowledge, information, and perspectives and influenced by organizational culture, structure, management, and IT tools (Cochran, 2011; Stewart, 1999; Tseng & Fan, 2011). Intellectual capital pervades an organization, but must be identified and managed to improve the effectiveness of knowledge work and knowledge workers (Goel & Rastogi, 2011; Stewart, 1999, 2001).

Stewart (2001) proposed a four-step process for managing intellectual capital. The first involved identifying and evaluating the role of knowledge in the organization. Bejinaru and Iordache (2011) discussed the integration of knowledge dynamics for creating intellectual capital that might increase organizational performance. The second step includes matching revenues to the knowledge assets that produce them (Stewart, 2001), which is important in identifying related expertise, processes, and capabilities, as well as the organizational mix of human, structural, and customer capital.

Once captured, the third step requires the development of a strategy to invest in and exploit organizational intellectual capital (Stewart, 2001). The stage requires great thought, as organizational premises such as value proposition, leadership style, and organizational culture integrate with the coordination, transfer, and creation of knowledge assets (Salem, 2007; Stewart, 2001). The strategy might provide actions for the fourth step of improving the efficiency of knowledge work and workers (Bejinaru & Iordache, 2011; Stewart, 2001). This fourth step also requires leadership, supportive structures and technologies, beneficial culture and processes, and business measures to flourish (Nėmeček & Kocmanová, 2011; Stewart, 2001).

Knowledge Management

Knowledge management covers a broad range of activities, so finding a concise and widely agreed-upon definition of the term is difficult (Davenport, 2011; Drucker, 2009; Giju, Badea, Ruiz, & Peña, 2010; Jain, 2011). The Comité Européen de Normalisation describes knowledge management as processes and activities to use knowledge to employ and develop individual and collective knowledge resources in competitive environments (Sarmento, 2005). Others describe it as recording knowledge and expertise and making the results accessible to others (Key & Tompson, 2009; Morris et al., 2009). Knowledge management is also strategic management and using the value of intellectual assets (Bejinaru & Iordache, 2011; Noruzi, 2011).

Knowledge management might involve processes, tools, and structures to create, recreate, share, and improve intellectual capital (Bejinaru & Iordache, 2011). Knowledge management is important to business planning and can be a useful strategic tool when driven by outcomes (Binney, 2001; Noruzi, 2011; Oakes & Galagan, 2011). The concept

of knowledge management has been misused, abused, and narrowly applied; has spawned countless IT tools; and has provided volumes of analyses into the failure of such programs (Anantatmula, 2009; Drucker, 2002; Kankanhalli, Tan, & Wei, 2005).

An initial focus on tacit and explicit knowledge has allowed researchers and organizational leaders to recognize the importance of creating, sharing, managing, and enhancing knowledge, preferably to benefit entire organizations (Baran & Cagiltay, 2010; du Plessis, 2008; Mavodza & Ngulube, 2011). Allame et al. (2011) indicated a relationship exists between knowledge management and organizational benefits such as growth and innovation. Although knowledge management might result in financial benefit, workers should see gains as well (Bettoni & Eggs, 2010).

The knowledge spiral (Nonaka & Takeuchi, 1995) not only differentiated tacit from explicit knowledge but also defined individual versus collective knowledge. Such a distinction embodies access to knowledge (Nonaka & Takeuchi, 1995; Tseng & Fan, 2011). Nonaka and Takeuchi (1995) defined knowledge transformation using multiple components. Socialization occurs when tacit knowledge was obtained from others though sharing. Externalization happens when tacit knowledge is articulated into explicit form. Combination includes the drawing of explicit knowledge in a systematic way by users. Internalization involves explicit knowledge that is absorbed and made tacit by an individual (Nonaka & Takeuchi, 1995). The knowledge created through the four processes increases the knowledge available to an organization (Bratianu, 2010).

The knowledge management spectrum accommodates numerous approaches and allows organizational leaders to understand knowledge management and the effect it has on an organization (Binney, 2001). The elements of the spectrum include the following:

1. Transactional: when knowledge is found by the user through the use of technology.
2. Analytical: where knowledge is created through the identification of patterns that are derived from external sources of vast amounts of data, such as data warehouses.
3. Asset management: the process through which knowledge is created in the process of doing business and kept for future use, in the form of intellectual property or other knowledge assets.
4. Process based: when knowledge is created through the improvement of business processes methods and procedures.
5. Developmental: where knowledge is enhanced through the improvement of worker competencies and capabilities.
6. Innovation/creation: where an environment is created to foster collaboration, which enhances knowledge creation.

The knowledge management spectrum acts as a framework that allows for the assessment of knowledge management within an organization and assists in knowledge management planning (Binney, 2001). Access to a simple tool for such an assessment would benefit Bermudan organizations, but would have to go further to address retention.

The basis of the I-space model is the premise that structured knowledge flows more easily than unstructured knowledge (Boisot, Macmillan, & Han, 2007). Structure occurs through codification and abstraction. Both work together to structure knowledge more efficiently, which ultimately makes the knowledge easier to diffuse. The concept of transforming data into information and then into knowledge is a key theme of the model.

The four-looped knowledge management model leads to enhanced intellectual capital and organizational performance through creating, sharing, organizing, and applying knowledge (Darvish et al., 2010). Creation includes ideas, new processes, combining elements, and using library information, while organizing involves storing, recording, and preserving. Knowledge sharing is where the flow of knowledge among people takes place, and applying involves taking the shared knowledge and using it. In the four-looped knowledge management model, knowledge combined with action benefits the organization.

Bettoni and Eggs (2010) proposed a model of knowledge cooperation to solve knowledge management problems. The model blended the community of practice concept of social interaction with knowledge as a product of experience. Three process groups, steward knowledge, socializing knowledge, and applying knowledge, were connected by two learning loops: participation and cultivation. The model supports the enhancement of organizational innovation and learning and worker development.

Knowledge management has been the focus of numerous studies. In 2003, Darroch developed a scale to measure knowledge management behaviors in an attempt to develop a theory. The focus of the resulting scales was knowledge acquisition, dissemination, and responsiveness to knowledge. Darroch also found firms with well-established knowledge management practices had a tendency to be more innovative. McCann and Buckner (2004) assessed the strategic use of knowledge management initiatives within organizations. Through an exploratory survey of 222 organizations in 10 industries, McCann and Buckner determined leadership, strategic direction, and organizational culture were important to the effectiveness of knowledge management

initiatives. Resource allocation and recognition programs also fostered sharing and retaining knowledge.

Studies on the use of technology in knowledge management adoption have evolved over the years. Technology is an enabler of knowledge management but could stifle the effectiveness of knowledge management programs when not used to support knowledge workers (Davenport, 2011). The strategy and tactics behind the capture, storage, organization, use, and sharing of knowledge often have technology tools put in place to support knowledge management and help to create organizational advantage (Grimaldi, Rippa, & Ruffolo, 2008). In a study of the MeCTIP model, Moffett, McAdam, and Parkinson (2003) found the organizational climate must support the adoption of technology. Feng, Chen, and Liou (2004-2005) examined knowledge management system adopters and discovered implementing such systems did not reduce production costs. It appeared over time that knowledge management systems could decrease expenses and strengthen productivity; however, the long-term effects of these systems encouraged in-depth examination. Technology tools associated with knowledge management often relate to the access to, and retention of, information and knowledge within an organization (Orzano, McInerney, Scharf, Tallia, & Crabtree, 2008).

Knowledge management has global applicability and there were studies that looked to the ability to bring globally dispersed entities together. Paik and Choi (2005) examined Accenture's global knowledge management system. Local support and control were considered critical to balance with global integration if such initiatives were to be successful. Oshri, Kotlarsky, and Willcocks (2007) looked at the management of expertise across dispersed sites of a Mumbai-based IT consultancy firm and found

organizational challenges related to the development of, search for, reuse of, and management of knowledge and relationship challenges in such areas as organization, transfer, retention, and monitoring of knowledge. Working through such challenges was the desire of the researcher.

Knowledge Sharing

Knowledge sharing plays a central role in knowledge management; however, the methods by which organizational leaders attempt to share knowledge differ (Abzari & Abbasi, 2011; Milway & Saxton, 2011). If the business model does not drive the knowledge management strategy, then knowledge sharing might not develop on a strong foundation to the correct ends (Almahamid et al., 2010). Buy-in to the business model, outcomes, and supporting knowledge sharing requirements becomes critical (Darvish et al., 2010).

Because knowledge is not homogeneous and reflects practice, the social construction aspect of knowledge sharing deserves attention (Buckley & Giannakopoulos, 2011). Sharing embodies observation, trust, feedback, mentoring, relationships, telling stories, justification of beliefs, metaphors, and analogies, among other attributes (Li et al., 2009; Milway & Saxton, 2011). The process of sharing knowledge involves transference (Herrero et al., 2010). Someone must acquire, construct, distribute, and interpret the knowledge. The knowledge is put into a certain context and is situation sensitive. The sharing of knowledge acquired through study, observation, and experience is transferred through insight and comprehension to create action on the knowledge by the person receiving it (Barbosa, Gonçalves, Simonetti, & Leitãto, 2009).

Kubo, Saka, and Pam (2001) found in a Japanese bank, knowledge sharing occurred through a combination of job security, life employment, formalized job rotation, and social networks. The case study of a U.S. Municipal Affairs Contact Repository Operating System used by 2,000 employees indicated even though an entity recognized benefits from the implementation of the system, knowledge sharing was difficult to achieve on a wide scale. The finding was due to traditional systems versus innovative pilot programs, mistrust of the new, differences in defining practices between entities, and limited resources (J. Zhang, Paro, & Sarkis, 2006).

Technology is a tool examined in studies on knowledge sharing. In a study of New Zealand and U.S. process-improvement groups, Kock and DeLuca (2007) found it possible to leverage electronic communications to provide a more democratic environment that allowed people to contribute to a discussion. Electronic communications could also allow those with power to direct and formalize group interactions.

Knowledge Retention

Knowledge retention involves the methods by which organizational leaders share, capture, and leverage employees' knowledge (DeLong, 2004; DeLong & Davenport, 2003; Ransbotham & Kane, 2011). The concept is often associated with the retirement of employees, but the changing dynamics of the workforce, including increased turnover among Generations X and Y and competitive recruiting, have made knowledge retention a priority (Davenport & Prusak, 2000; Hokanson et al., 2011; Howe & Strauss, 2007).

As one might expect, a one-size-fits-all solution is not realistic. Knowledge is unique to both the holder of the knowledge and the organization, and the effective

transfer of that knowledge to others might vary in quality (Nelson & McCann, 2010). As with knowledge management strategies, knowledge retention strategies depend upon many factors, including the environment, participants, situations, and business goals within which the transfer of knowledge must take place (Holtshouse, 2009).

Many criteria can help to ascertain the effectiveness of knowledge retention within an organization (Lichtenthaler & Lichtenthaler, 2009; Key & Tompson, 2009). Prioritization is often difficult because the importance of each criterion varies with whom one speaks within the organization and that person's view of how a strategy or tactic assists in the realization of goals (Juliano, 2006). Businesses are generally people-focused organizations with a goal to meet business goals and ensure survival.

Criteria provide structure, interaction, and sharing opportunities within organizations (Nelson & McCann, 2010). It is also important to make linkages between the criteria and the end goal (Key & Tompson, 2009). For example, the pursuit of organizational agility is an aspect that relates directly to the implementation of knowledge retention strategies due to the changing nature of the global business environments, and aids organizational leaders in meeting business goals (A. N. K. Chen et al., 2010).

Identifying the knowledge at risk of being lost is critical for any organizational leader and should be an important focus for leaders (DeLong, 2004). Knowledge at risk might be associated with a particular person or role. In organizations with somewhat predictable turnover, the risk assessment could take place at a departmental or client level (Davenport et al., 2010; Finnegan, 2010).

In some organizations, leaders use succession planning to mitigate knowledge transfer needs (Kim, 2010). Succession planning might provide methods by which knowledge sharing can take place before knowledge workers leave the organization (Oakes & Galagan, 2011). Some organizational leaders depend on hiring additional knowledge workers who will bring skills and expertise that they gained elsewhere (Davenport et al., 2010; Salem, 2007).

Knowledge retention does not mean a onetime transfer of knowledge from a worker will take place with the hope that the knowledge will be relevant to the organization in the future (Haarmann et al., 2009). Knowledge undergoes constant reconstruction, reflecting practice, interactions, and interpretation (Juliano, 2006). Organizational leaders must constantly develop strategies to capture knowledge for use in many processes (Nonaka & Toyama, 2005). The purpose of knowledge retention strategies is not to hoard information but to provide the necessary information or access to the relevant party when needed (Nelson & McCann, 2010).

Multiple tools enable knowledge acquisition. Questionnaire responses, focus group discussions, and recording interactions capture aspects of a knowledge worker's expertise, including technical activities, general knowledge, and lessons learned from mistakes (DeLong & Davenport, 2003). Documentation is important to retention, and distribution of explicit knowledge captured this way takes place using either passive or interactive tools (Goth, 2010). Mentoring involves interactions between the workers with the knowledge and the workers who wish to capture the knowledge (Senapathi, 2011). Trust is also important in such a relationship, and the workers with the knowledge must

be motivated and have trust in their organization to share their expertise (Buckley & Giannakopoulos, 2011; DeLong & Davenport, 2003).

Training is also used for knowledge retention. Training on its own often results in new knowledge as the application of captured knowledge relates to the employee's specific job situation (Hamburg, 2011). Marsh and Stock found in their 2006 study that as knowledge retention practices become everyday occurrences, knowledge workers might not be as thorough in their evaluation, analysis, and refinement of stored knowledge to create enhanced knowledge. In this situation, training continues to be beneficial as a component of knowledge retention strategies (DeLong & Davenport, 2003).

Knowledge Transfer

Knowledge transfer can be a passive or interactive experience (Broucker, 2010). In passive transfer, tools such as IT provide repositories that allow the capture of and access to information, as necessary (A. N. K. Chen, Hwang, & Raghu, 2010). Passive transfers have garnered a lot of attention in the information society, but the extent to which tacit knowledge is transferable remains unknown (Bratianu, 2010; Drucker, 2002). Documenting experiences varies in quality, and capturing emotion and intuition is almost impossible (Casullo, 2009).

Interactive knowledge transfer requires an understanding of the knowledge critical to the organization and a level of trust for the transfer to take place (Broucker, 2010; DeLong & Davenport, 2003). Leaders should perform an organizational assessment regarding what knowledge is valuable to the organization in the long term (Carleton, 2011). If deemed valuable, the preclassification of the knowledge into explicit

(purely experiential) or implicit (able to be communicated) is useful (DeLong & Davenport, 2003; L. Zhang, Li, Shi, & Liu, 2009). Identifying methods to capture the knowledge follows with a cost-benefit analysis (Jian & Jeffres, 2005; MacDougall & Hurst, 2007).

Many studies have involved knowledge transfer. Acton and Golden (2003) examined the impact of training on employee retention. A survey of 101 employees across 39 Irish software companies indicated for smooth transfer of knowledge, the work environment was most important to staff retention and high-quality training. Jensen and Szulanski (2007) examined the use of templates in knowledge transfer. Templates are important aids in the replication process for knowledge transfer.

Rodgers and Negash (2007) examined Web-based technologies and found people increasingly use Web-based systems to aid in increasing their problem-solving skills through access to information, information quality and system quality improved. Donate and Guadamillas (2010) looked at knowledge management practices, particularly knowledge transfer and knowledge storage, organizational culture, and technical results in organizations. Donate and Guadamillas found knowledge transfer had a positive effect on innovation results.

Communities of Practice

The concept of communities of practice continues to be associated with knowledge retention and transfer strategies. Whether developed for the purpose of managing knowledge, sharing expertise, enhancing learning, or creating meaning, communities of practice allow for the mobilization and diffusion of knowledge (Baker-Eveleth et al., 2011; Wenger, 2005; Wenger et al., 2002). Communities of practice, in

the simplest form, involve people coming together to share, learn, work, and innovate (Li et al., 2009; Wenger, 2005).

The term *community of practice* belies some ambiguity because leaders increasingly adopt these structures to foster innovation and learning, among other benefits (Probst & Borzillo, 2008). Communities of practice often develop from the need for knowledge sharing (Wenger et al., 2002). Although a community of practice is a beneficial organizational or intraorganizational structure, a community might also vary by purpose, size, composition, boundaries, formality, and virtual environment (Jeppesen & Laursen, 2009).

Communities of practice embody a strategy and a tool for knowledge retention (Hemmasi & Csanda, 2009). The community forms for knowledge workers to create the environment and the context for sharing through social identity, organizational culture, and shared purpose (Wang & Ramiller, 2009; Wenger, 2005). Learning is a critical foundation of communities of practice and includes both single- and double-loop learning (Yeo, 2008).

Everett Rogers's diffusion of innovations model illustrates how social groups adopt innovations (Ainamo, 2010). Adopter categories, identified along a bell-curve spectrum as innovators, early adopters, early majority, late majority, and laggards, attest to the concepts of change, networking, and influence in social groups (Ainamo, 2010). Knowledge is an important component in social influence in most of the adopter categories and often initiates movement (Ainamo, 2010; Wenger, 2005). The other social influences, including persuasion, decision, implementation, and confirmation, also occur in social groups (Ainamo, 2010).

Understanding how to form, develop, and sustain communities of practice is of increasing interest to researchers. Dubé, Bourhis, and Jacob (2005) discovered the organizational environment, leadership, structure of the community, and context are important to the success of a community of practice. Technology and identifying individuals to participate in the communities are only two factors that do not themselves guarantee success. Verburg and Andriessen's (2006) Community Assessment Toolkit provides a method for assessing communities of practice. The toolkit consists of two interviews: one to assess organizational structure and one to assess the community structure before community members receive the survey. These steps attest to the importance of the organizational and community environment.

Haarmann et al. (2009) explored knowledge retention at Airbus using the knowledge exchange concept and found a systematic knowledge exchange was useful for career development, succession planning, and results attainment. Kislov et al. (2011) found communities of practice beneficial for working with others within an organization, building a worker's identity, and knowledge sharing. Collaboration was deemed an important benefit for interprofessional and interorganizational work.

Organizational Agility

As both external and organizational environments continue to evolve, using knowledge to improve agility might allow leaders to keep pace with the needs of their organizational environments and increase effectiveness (Yaghoubi, Kazemi, Dahmardeh, & Arhami, 2011). Planning a strategy to manage both the complexity and the rate of change within the business environment provides greater difficulty for organizational leaders because change is constant (Yaghoubi, Kord, & Azdikhah, 2011). Agility

embodies the concept of having processes in place and competencies accessible to workers in the organization to respond quickly to changes in the business environment (Almahamid et al., 2010). Knowledge retention might aid in the enhancement of organizational agility.

Agility presupposes the elimination of some boundaries in providing the ability to access diverse resources and look for creative solutions to problems (Kislov et al., 2011). Such boundary breaking brings with it some risk because organizational leaders might not have a great deal of control over interactions with the external environment (Benn & Martin, 2010). Organizational leaders need to be able to assess their internal and external environment continually, understand what they find, and quickly reallocate resources to manage the situations they encounter (Cloud, 2010).

Leaders must be able to transform organizational knowledge at a rapid pace. Leaders should also make decisions while deploying and supporting the resources allocated (Bevan, 2011; DeLong, 2004). The capacity to manage relationships and motivate professionals within the environment requires the constant evolution of the organization's systems, skills, and technologies (Cloud, 2010).

Agility often describes attributes of a strategy or process. The term is often associated with innovation, flexibility, and change (Yaghoubi et al., 2011). From another perspective, the terms embody various factors including execution, internal operations, external influences, cooperation, and change (A. N. K. Chen et al., 2010). Agility might be an outcome of knowledge retention and transfer strategies.

IT Sector Considerations

IT is an essential part of both businesses and people's everyday lives. Knowledge workers in the IT sector must have the expertise to ensure IT users can continue to do what they need to do with IT (Denning & Frailey, 2011; Mastracci, 2009). The IT field has developed into the computing field over the past 50 years, with IT now narrowly defined as encompassing technology and business applications (Denning & Frailey, 2011). Even as the field has expanded, the number of students pursuing computing degrees worldwide has decreased since 2002 (Denning & Frailey, 2011).

The IT sector is a kind of community of practice because it exists to take care of requirements and obligations in an area of work or life (Wang & Ramiller, 2009). Sector workers rely on an organized body of knowledge for their respective practice, or area of skill and competence, as they provide services (Denning & Frailey, 2011). The knowledge the workers access is a multifaceted driver providing both leaders and workers the ability to break down even cultural barriers as interactions take place in the community (Allame et al., 2011; Schimmel & Muntslang, 2009).

Certifications have become more common as IT workers pursue specialized training and development in subprofessional or specialty areas (Denning & Frailey, 2011). Certification areas represent additional communities of practice, usually interorganizational in nature (Quan, Dattero, & Galup, 2007). Licensing has been slowly adopted in the industry and does not appear to be as dynamic and versatile as certification (Denning & Frailey, 2011).

The basis of IT leaders' reliance on IT knowledge workers is the need to capture and use the tacit knowledge of these workers (Rizzuto, 2011). Leaders of IT

organizations have effectively captured and used knowledge to evolve their profession (Denning & Frailey, 2011). IT knowledge workers realize the value of their tacit knowledge, so leaders must be cognizant that knowledge sharing cannot be forced and should develop an environment where sharing is a collaborative endeavor (Broucker, 2010; DeLong & Davenport, 2003).

Methods and Techniques Used to Study Knowledge Using Communities of Practice

Researchers often study communities of practice in the domains of education and business with a focus on professional development (Acuna, 2010; Baker-Eveleth et al., 2011; Buckley & Giannakopoulos, 2011; Seaman, 2008). There is also a focus on knowledge sharing through communities of practice on team-based projects (Kayworth & Leidner, 2004; Lank et al., 2008; Probst & Borzillo, 2008; Yeo, 2008) and on the use of IT tools to enable virtual communities of practice (Amin & Roberts, 2008; Hanewald & Gesthuizen, 2009; MacDonald, 2008; Triggs, 2004; White, 2010). In the IT industry, communities of practice might serve many purposes in addition to those mentioned. Communities of practice are important to the IT sector because the ability for professionals to work together in various ways brings benefits through innovation (Denning & Frailey, 2011). How leaders of IT organizations evolve communities of practice to meet their unique knowledge retention and transfer needs is therefore an area of interest.

Researchers have used qualitative quantitative, and mixed methodologies in previous studies to examine knowledge retention and transfer to varying degrees, as well as communities of practice (Acuna, 2010; Buckley & Giannakopoulos, 2011; Cegarra-Navarro, Wensley, & Sánchez-Polo, 2011; Darvish et al., 2010). The appropriateness of

the research method and ultimately the research design depends upon the goals of the researchers (Dobrovolny & Fuentes, 2008).

In 2007, Hara conducted a qualitative ethnographic case study to examine the role of IT in supporting communities of practice in a public defender's office. Using observations, interviews, and document reviews allowed for an in-depth analysis of the various roles that IT supported as a tool and as a support mechanism. Cegarra-Navarro et al. (2011) used a quantitative methodology to test two hypotheses in an attempt to understand the relationship between health information technologies and quality of service due to increased access to information and organizational learning. A mixed methodology using interviews, observations, and questionnaires allowed Falkman, Gustafsson, Jontell, and Torgersson (2008) to examine whether semantic Web technologies affect work practices.

Quantitative methodologies are beneficial for describing relationships and explaining trends (Dobrovolny & Fuentes, 2008). Such studies often include the measurement of variables or attitudes. Researchers often use qualitative methodologies to examine experiences of subjects and to gain an understanding of currently unknown variables (Annells, 2006). The choice of research design supports the purpose of the study (Dobrovolny & Fuentes, 2008).

The choice of a qualitative phenomenological research design for the current study supported a desire to analyze the meaning attributed to participant experiences and interactions in the interorganizational community of practice (Schutz, 1967). A study developed along similar lines, due to the researchers' desire to examine organizational communities of practice, included eight hypotheses, and through correlational analysis

and descriptive statistics, the researchers predicted organizational community of practice effectiveness in the presence of certain variables (Kirkman, Mathieu, Cordery, Rosen, & Kukenberger, 2011). Although this direction was compelling, there may be variables unique to the interorganizational community of practice in question and not yet identified (Annells, 2006). Exploring the individual and socially derived meaning created by the participants is more desirable than explaining existing relationships (Ryan, Coughlan, & Cronin, 2007; Schutz, 1967).

Literature Gaps

Four gaps in the literature indicated the need for a qualitative phenomenological study to gain a deeper understanding of knowledge retention and transfer practices within an IT interorganizational community of practice. Limited viewpoints exist in the IT literature regarding how to retain and share IT worker knowledge. There also does not appear to be much focus on the reluctance of IT workers to share their knowledge. IT often appears to be used in learning organizations; however, knowledge retention and transfer strategies appear narrowly defined in these organizations (Anantatmula, 2009; Kok, 2010; Yau & Cheng, 2010). Finally, although communities of practice exist in the IT sector, literature on the use of the community for knowledge retention and transfer is limited. The findings of the current study serve to close these gaps.

Consistent view of knowledge retention and transfer. Managing knowledge within the IT sector is difficult. The capture, storage, and sharing of explicit knowledge is easier to understand than for tacit knowledge (Bratianu, 2010). Many leaders do not know conceptually how they either manage or structure the flow of knowledge within their organizations, as these knowledge workers often have responsibility for their own

development (DeLong & Davenport, 2003; Drucker, 2009). Many of the metrics that might be used to track the success of the IT and business sectors do not assess the effective use of knowledge and therefore whether the knowledge stored and shared is used effectively (Jaradaat & Al-Saleh, 2010).

Reluctance to share. Organizational capabilities include complex skills, expertise, and knowledge that play a role in organizations' processes (Mastracci, 2009). Such processes allow leaders and managers to coordinate activities and leverage assets. The knowledge component of organizational capabilities is important; accumulated through individual training and experience with the processes; and embedded in technical systems, formal procedures, and established routines in the IT sector (Bolívar-Ramos et al., 2011). If knowledge workers do not have a sense of ownership in the initiative, they might not be interested in sharing their knowledge (Broucker, 2010).

A problem arises when the expertise within the organization is not easily transferred, not just because tacit knowledge is difficult to convert but also because of knowledge workers' reluctance to share it (Acuna, 2010; Bratianu, 2010). This is an area where there appears to be a limited examination in the IT sector. In an environment where knowledge retention and transfer are desired, it might be useful to understand what leaders could do to encourage those reluctant to share to do so (Nonaka & Takeuchi, 1995).

Organizational learning and knowledge retention. Customization of a knowledge strategy begins with the organizational strategy of an IT firm and involves the competencies of the organization and leaders' actions (Goel & Rastogi, 2011; Tseng & Fan, 2011). The resulting solutions that might be identified for implementation should

not be a single static program that puts transcripts from employee interviews into a database. The retention and transfer of knowledge might require the use of many methods and frequent reassessment of the value of what is captured and shared (Bevan, 2011; Gibbons, 2011).

Organizational learning using communities of practice. At a strategic level, the skills of each worker hired by an IT organization provide a promise of access to the worker's knowledge base (Drucker, 2002; Rothwell, 2011). Access to tacit knowledge, through knowledge sharing or codification of the knowledge, might enhance organizational performance (Bolívar-Ramos et al., 2011). Access to IT worker knowledge might also play a role in leadership development and decision making and enhance organizational agility (Yaghoubi et al., 2011). Knowing how IT knowledge workers enhance their knowledge might therefore be useful. Knowing how interorganizational communities of practice might benefit member organizations through the participation of their workers in the community might also be useful.

Conclusion

The literature review supported the social theory of learning as a foundation for knowledge management and communities of practice. The knowledge management and community of practice models reviewed each subscribed to the social learning theory to some degree (Nonaka & Takeuchi, 1995; Wenger, 2005), although the application of the social theory of learning is not consistent, as illustrated in the other models summarized in the literature review. Nonaka and Takeuchi (1995) examined individual versus collective access to knowledge, whereas Binney (2001) focused on the organizational

impact of knowledge. The lack of a consistent theoretical model for knowledge management indicated the discipline continues to evolve.

Knowledge retention and transfer as a subset of knowledge management could easily be confused with knowledge sharing, as the concepts overlap (DeLong & Davenport, 2003). The examination of knowledge retention and transfer appears to be a growing area, which, like knowledge management, has many entry points (Giju, Badea, Ruiz, & Peña, 2010; Juliano, 2006; Key & Tompson, 2009). In the IT organizational context, there appears to be only limited application of knowledge retention and transfer practices focused on tacit knowledge using communities of practice, which is limiting because knowledge retention and transfer are dependent on relationships and an understanding of changing needs in the context of the environment (Buckley & Giannakopoulos, 2011; DeLong & Davenport, 2003; Kislov et al., 2011).

Summary

The literature review contained information on the concept that the development of effective knowledge retention and transfer programs requires an understanding of the knowledge within an organization. The ability to leverage knowledge management options that can be tailored to the needs of the organization and organizational goals is beneficial (Bejinaru & Iordache, 2011; Darvish et al., 2010). Knowledge retention and transfer strategies should provide the desired benefits to organizational leaders upon implementation and are significant for planning, execution, and assessment (A. N. K. Chen et al., 2010). Continuous inquiry and improvement processes linked to both organizational and individual goals might ensure a more robust assessment of knowledge retention strategies and activities (Kislov et al., 2011).

Literature on knowledge management includes a broad range of topics, including knowledge creation, sharing, transfer, knowledge retention, and deployment (Davenport, 2011; Drucker, 2009; Giju et al., 2010; Jain, 2011). Key characteristics of knowledge retention include the sharing, capture, and use of knowledge, as well as organizational factors such as the internal environment, professionals internal and external to the organization, leadership, industry situations affecting the design of the knowledge management strategy, and the use of tools such as templates and communities of practice (DeLong & Davenport, 2003; Jensen & Szulanski, 2007). Chapter 3 contains the details of the methodology chosen for the study.

Chapter 3

Method

The purpose of the current qualitative phenomenological study was to gain a deeper understanding of knowledge retention and transfer practices within an IT interorganizational community of practice. One third of IT jobs might be at risk because of skilled IT workers retiring or outsourcing IT work to other jurisdictions (Frey, 2010; Tambe & Hitt, 2010). IT professionals are using communities of practice to retain and transfer knowledge (Li et al., 2009; MacDonald, 2008; Probst & Borzillo, 2008; Sheehy, 2008; Yeo, 2008). Understanding how the use of an interorganizational community of practice provides IT leaders a knowledge retention and transfer opportunity to identify IT talent with the aptitude and leadership potential that might benefit their respective organizations in the future requires a deeper social and cultural understanding of the phenomenon (Schutz, 1967).

Leaders realize the importance of knowledge to the competitive advantage within their organization (Goel & Rastogi, 2011). The reliance on knowledge workers in the IT sector often requires the recruitment of highly skilled individuals who have world-class expertise (Oshri et al., 2007). Although the IT sector has the added pressure of decreased enrollment in computing degrees and the offshoring of IT work, themes such as turnover and the retirement of workers also feed into the need for these organizations to capture, store, and redeploy knowledge (DeLong, 2004; Denning & Frailey, 2011). This chapter includes the reason for selecting a qualitative phenomenological research approach. The chapter contains discussions on the population, sample, informed consent procedures, and

data collection methods. Also included are descriptions of the data analysis method, the reliability, and the internal validity of the study.

Research Method Appropriateness

Qualitative methodology was the most appropriate for the study. According to Dobrovolny and Fuentes (2008), qualitative research starts with assumptions, an overall perspective of how one views and interprets the world, the possibility of using a theoretical basis, and the examination of research problems to explore the meaning given to a particular problem and to discover variables that might be currently unknown. It is possible to understand a phenomenon by examining people's lived experiences of that phenomenon (Annells, 2006). The goal of the study was to gain a better understanding of how using an interorganizational community of practice might provide IT leaders a knowledge retention and transfer opportunity to identify IT talent with the aptitude and leadership potential that might benefit their respective organizations in the future.

The literature review contained evidence of a gap in the research in the areas of knowledge retention and transfer practices in IT communities of practice to identify and develop future leaders, specifically in an environment where entry-level positions are often difficult to obtain because of the requirement for a particular level of specialized IT skill. Qualitative methods are beneficial when attempting to develop a subjective understanding of an area about which little is known (Chenail, Cooper, & Desir, 2010). A qualitative phenomenological study can therefore involve exploring the lived experiences of several subjects, and social phenomenology was appropriate because an assumption was that individual meaning and social interaction create reality (Annells, 2006; Schutz, 1967). Due to the literature gap, the use of a qualitative method was

appropriate because the questions posed to participants were broad and universal in nature to understand the phenomenon under exploration (Banner, 2010).

Quantitative methods describe trends and might help to explain relationships between characteristics or attributes (Dobrovolny & Fuentes, 2008). Using a quantitative method for the current study would have allowed for measuring organizational performance or the attitudes toward knowledge retention and transfer. This was not the direction desired to address the research problem and hence the method was not pursued. Instead, the phenomenon in question was an area from which much could be gleaned through exploring the participants' experiences (Bird, 2009).

Both quantitative and mixed methods would not have been appropriate for the study because the purpose was not to evaluate a hypothesis or explain the relationship between variables (Dobrovolny & Fuentes, 2008; Ryan et al., 2007). A qualitative approach was more appropriate because the meaning that the participants gave to their experiences of knowledge retention and transfer in the environment of the interorganizational IT community of practice provided a depth of information and allowed for the identification of individual and socially constructed meaning (Schutz, 1967). As the study involved exploring currently unknown variables, a qualitative approach was the most appropriate for the study (Dobrovolny & Fuentes, 2008).

Research Design Appropriateness

Many qualitative research designs would have been appropriate for the study. Indeed, the study was designed to reflect the open, emergent nature of qualitative inquiry, allowing for the evolution of the research design (Glesne & Peshkin, 1992; Guba & Lincoln, 1981). The following were qualitative designs considered as alternatives to the

selected qualitative phenomenological methodology. The purpose and goals of the study led to selecting the phenomenological design (Dobrovolny & Fuentes, 2008).

Knowledge retention and transfer practices, while increasing in importance within knowledge-based organizations, are difficult to classify and assess (DeLong, 2004; Nelson & McCann, 2010). Many knowledge retention or knowledge transfer activities, such as training and recognition programs, receive a separate human resources focus within many IT organizations. The understanding of the concept of knowledge retention and transfer varies according to the needs and knowledge of the respective organizations (Nonaka & Toyama, 2005). The need to assess the extent of knowledge retention and transfer practices used in an interorganizational IT community of practice led to the selection of a qualitative phenomenological research design to analyze the meaning that participants give to their experiences and social interactions (Schutz, 1967).

The study included the traditional qualitative research practice of using open-ended interview questions (Whiting, 2008). A qualitative phenomenological research design provided useful data to explore knowledge retention and transfer experiences in the interorganizational IT community of practice (Flood, 2010). Participant thoughts and actions were shared and were fundamental to the way in which they formed their local reality (McWilliam, Kothari, Ward-Griffin, Forbes, & Leipert, 2009).

The researcher could have also used the case study design to address the research problem from the perspective of exploring leader and trainee experiences within the community of practice from a collection perspective (Berg, 2009; Yin, 2009). The case study design involves exploring a system of a particular instance (Gibbert, Ruigrok, & Wicki, 2008). The focus might be on a unique situation or an issue or issues (Merriam,

2009). The case study design would have been a good option for the study because participant experiences could have been examined to understand the phenomenon (Yin, 2009). This design was considered as the researcher would also be able to explore numerous instances of the phenomenon, which would direct the study towards a collective case study (Berg, 2009; Yin, 2009).

Grounded theory involves developing a theory that emerged from the data (Annells, 2006). The theory evolves from questions into a core category, and relevant issues and questions allow for further modifications to instruments or questions for additional data collection. Such a method might be useful to explore the phenomenon further.

In an ethnographic study, the researcher observes the behavior of a cultural or social group (Noy, 2003). The focus is on the meaning of interactions, behavior, and language. The most common ethnographic approach is participant observation from which a researcher collects and analyzes extensive notes. The intention for the current study was to explore the experiences of individuals who had already experienced the phenomenon. The ethnographic design might be more suitable for future research after the meaning derived by participants is understood from the current study.

Researchers use a narrative design to analyze and understand the lived and told experiences of one or two individuals (Hamilton, Smith, & Worthington, 2008). In narrative studies, researchers may focus on biographical, autobiographical, or oral history. The narrative design might be useful in the future to explore particular experiences in greater detail, but was not part of the current study as the desire was to understand individual and socially constructed meaning from multiple participants.

The basis of the action research design is the premise that the subjects become researchers via an intervention, and their interaction determines factors that support and inhibit the phenomenon (Herr & Anderson, 2005). In action research, participants receive encouragement to examine their practices, develop a plan of action, implement the plan, and evaluate the effectiveness of those actions (Mills, 2007). Although action research would have allowed for solving a particular action, using the design would require a lengthy time frame for the research phase.

Social phenomenology, as a subcategory of phenomenology, was chosen to explore the lived experiences of IT leaders and IT trainees who participated in an interorganizational IT community of practice and experienced knowledge retention and transfer for leadership development. Social phenomenology appeared a beneficial design because the experiences of the participants and the meaning they ascribed to the experiences would play a role in their social actions and interactions (Schutz, 1967). Specifically, Schutzian social phenomenology provided access to the relationship between people in relationship to their thoughts and actions in the community of practice (Schutz, 1967).

The social structures created by the participants in the interorganizational community of practice are the objective results of the subjective meanings that they gice to their interactions to organize and consolidate their experiences (Schutz, 1967). The development of these social structures is to the benefit of all involved and results from the combination of their social interactions and individual belief systems (Bird, 2009; Kim & Berard, 2009; Schutz, 1967). An examination of the interactions of the participants and leaders coming together and the resulting structures was beneficial to

understanding the interdependence of the actions of the participants, the structures within the community of practice, and the realities created by the participants (McWilliam et al., 2009; Schutz, 1967).

The goal was to explore the lived experiences of seven leaders, six former IT trainees and two government leaders in an interorganizational IT community of practice to gain a better understanding of knowledge retention and transfer practices for participating IT organizations through identifying IT resources that have the aptitude for greater development within their organizations. A social phenomenological research design allows for examining the personal and social experience of the participants to develop an understanding of how various elements of their experiences combine (Bird, 2009). The descriptions gathered from the experiences of the participants provide a record of their reality and help to identify what methods leaders could use to retain and transfer knowledge (McWilliam et al., 2009). Analysis of the participants' data might result in emergent themes that are essential to the description of the phenomenon (Fereday & Muir-Cochrane, 2006).

Population

Bermuda is a 21-square-mile chain of islands, approximately 700 miles east of North Carolina. The British Overseas Territory has a significant IT sector with a large number of IT professionals per capita. The researcher has worked in the IT sector in Bermuda for 15 years and has been involved in an interorganizational IT community of practice for 7 years. The selection of Bermuda for the study offered proximity, convenience, and access to participants.

According to Flood (2010), participants in a phenomenological study must have experienced the phenomenon. The Technology Leadership Forum (TLF) community of practice consists of 32 member companies and organizations and 28 former IT trainees. The population for the study included IT leaders and trainees who worked for companies and organizations who were members of the TLF in Bermuda. Participants had experienced the phenomena of knowledge retention and transfer practices through their participation in the TLF.

Sampling Frame

Participants were identified through a purposeful homogeneous sampling because a particular group was desired to maximize the ability to gather data to answer the research questions (Shen et al., 2011; Tuckett, 2004). The sample was taken from the IT leaders and former IT trainees of the TLF, an interorganizational community of practice in Bermuda. To participate in the study, IT leaders and former trainees must have participated in the trainee program and experienced knowledge retention and transfer practices during the trainee program.

According to Mason (2010), sample sizes for phenomenological studies range from five or six to 25 subjects. The numbers are a guideline, and researchers should understand saturation in relation to their study. The intent of the study was to obtain a sample of ten IT leaders and ten former IT trainees from the TLF in Bermuda with the intention to stop at a lower number after reaching saturation (Mason, 2010).

Data collection in a phenomenological study involves a number of participants to achieve saturation (Mason, 2010). A sample of 20 participants was appropriate because the participants shared knowledge retention and transfer experience in the TLF, and the

TLF membership and trainee pool contains 32 leaders and 28 former trainee participants, respectively. The population of leaders and former trainees was appropriate because the participants shared knowledge retention and transfer experience in the interorganizational community of practice and many former trainees have been hired by partner organizations. The participant invitation was sent by e-mail to potential participants who were TLF leaders or former trainees who participated in the trainee program and experienced knowledge retention and transfer practices.

Informed Consent

Obtaining informed consent helps to ensure the participant understands the purpose of the study and might result in honesty from the participant (Goddard, Murray, & Simpson, 2008). Depending upon the way in which the potential participant made contact with the researcher to express interest in volunteering for the study, an explanation of the purpose of the study, what they would be asked to do, potential risks, stressors, time commitment, withdrawal process and researcher contact information was be made verbally and/or electronically. The researcher also sent and read the informed consent form (see Appendix A) to the potential participant before the interview. If the potential participant had any questions, they were answered. The researcher's contact information was included on all correspondence.

The informed consent form included an explanation of the data collection process, the voluntary nature of the study, the participant's right to withdraw from the study at any time, confidentiality of participant identities and contact information of the researcher. Upon agreement to participate, the participant was required to sign two copies of the form. One copy was provided to the participant and the other was be retained by the

researcher. Data was not collected until participants signed the informed consent form before the interview process began. The participants were permitted to sign the informed consent form in person or they could sign, scan, and e-mail the form.

Participants could opt out at any time. If the participant were to notify the researcher that they wished to withdraw during any stage before, during or after the research study, either via email, written letter, or verbal communication, the researcher would have destroyed either by deletion of digital files or shredding of physical material the participant's information from the study. Once completed, the participant would have be sent correspondence stating that this has been done. In the case of withdrawal after the providing data for the study or after the study, the data attributed to the participant's code would have been isolated and removed from the data analysis process.

Data Collection

According to Flood (2010), phenomenology allows researchers to reveal meanings as the subjects connect with the experiences they are living. The focus of phenomenology is on the subjects' perception of a particular phenomenon within a particular social context (Jurema, Correia Pimental, Cordeiro, & Austregésilo Nepomuceno, 2006). The study involved interviews with open-ended questions used to explore the lived experiences of a purposeful homogenous sample of seven IT leaders, six former IT trainees and two government leaders currently involved in an interorganizational IT community of practice in Bermuda.

Using interviews for phenomenological studies allows researchers to contemplate and evaluate what they are hearing while asking the questions and developing follow-up questions (Whiting, 2008). The questions also help the participants to explore their lived

experience of the phenomenon (Banner, 2010). The researcher structured the interviews in the current study using open-ended questions that aligned with the research questions developed to guide the study. Participants in the study were encouraged to describe their experiences with knowledge retention and transfer practices used in an interorganizational IT community of practice.

Compared with other data collection techniques, such as focus groups, a researcher conducting individual interviews can listen to the participants' experiences one-on-one as they respond to the interview questions (see Appendix B). The process allows for identifying themes and patterns in the initial analysis to understand the participants' experience of the phenomenon (Fereday & Muir-Cochrane, 2006). Tacit knowledge and behaviors can be examined for meaning (Dobrovolny & Fuentes, 2008).

The data collection process was initiated with the creation of two distribution lists, one of TLF leaders and one of former TLF trainees. The distribution lists were used to send an invitation to potential participants. After obtaining interest in participation, the researcher issued and collected informed consent forms (see Appendix A). Interviews were arranged upon receipt of the signed informed consent form.

Interviews took place face-to-face at the TLF office. Interviews allowed the participants to describe their experiences, permitting the researcher to become a co-creator in establishing context, constructing the experience, and reflecting on meaning (Flood, 2010). As the interview data were collected, initial categories were determined (Fereday & Muir-Cochrane, 2006). Interviews continued until saturation occurred (Mason, 2010). At the end of the interview data collection process, the interview data were analyzed.

The interviews were recorded and subsequently transcribed. Participants received transcripts for verification. The recording of the interview and verification of the transcripts by the participants assisted in minimizing researcher bias, and data analysis was based on the interview responses ("Interviewee Transcript Review," 2009). Although interviews were the preferred method of data collection for the study, limitations such as time constraints during the interviews, length of transcription time, audio quality, and clarity of the recordings arose.

Confidentiality

The informed consent form was used to communicate to the participants that the resulting report would present the results of the interviews in aggregate. Identification of individual participants would not occur, as processes would be used to protect their identity. A number was used to identify each participant, and a second number identified the organization for the interview. The numbers assigned during data collection to the participants were used for identification and throughout the data analysis. The participant number assigned also carried through to any statements shared by the participants, outcomes, and demographic information. The numbers protected the participants' privacy, unless they requested otherwise.

Recorded results of the interviews did not contain the name of the participants or the organization, and every effort was made to protect the participants' identity and the data collected. Consent forms, audio files, transcripts, and data collected remain in a locked file in a secure location for three years. Only the researcher has access to this information. After three years, the forms, audio files, transcripts, and data will be destroyed by being erased from a computer or destroyed in an incinerator.

Pilot Study

For qualitative studies, researchers must carry out the research methodology properly (Donrovolny & Fuentes, 2008). For the phenomenological research design, participant interviews are critical to the success of the study (Flood, 2010). Appendix B includes an interview form of open-ended questions to guide the study. The instrumentation for the study provided for collecting data from participant experiences. The interviews were the basis for a discussion to explore participants' lived experiences of knowledge retention and transfer practices in an interorganizational IT community of practice (Flood, 2010). After each interview, participants were thanked (see Appendix C).

According to Neuman (2003), a pilot study is beneficial for minimizing difficulties with clarity and bias. A pilot study took place with one IT leader and one former IT trainee from the TLF. The pilot study involved participants who were not part of the main study and who validated the appropriateness of the interview questions (Fereday & Muir-Cochrane, 2006). Participants reviewed the interview questions and provided feedback on relevance, clarity, and bias. Based on the feedback from the pilot study, modifications were made.

Validity and Reliability

Validity and reliability have different definitions in qualitative studies. Validity is sought to reduce errors in the design methodology and requires consistency in the application of the research design in quantitative studies, whereas reliability speaks to the accuracy, repeatability, and dependability of the research study (Neuman, 2003). In qualitative research, credibility, dependability, transferability, and confirmability are the

critical components that establish a level of validity and reliability for the study (Lincoln & Guba, 1985; Riege, 2003).

Methods to maximize reliability, or in the case of this qualitative study, dependability, included a robust study protocol for data collection and the use of a study database to retain the data collected from the interviews (Reige, 2003). The dimensions of confirmability (construct validity) and credibility (internal validity) were pursued through the creation of a study that engaged IT leaders and former IT trainees to explore their experiences within and upon leaving the community of practice (Riege, 2003; Roberts, Priest & Traynor, 2006). Triangulation was present through the multiple sources of data collected through the leader and trainee interviews (Maria & Kiger, 2005; Roberts, Priest & Traynor, 2006). The chain of evidence for the study lead from data collection, through to the findings, interpretations and recommendations (Riege, 2003).

Qualitative studies have limited transferability (external validity), which required the articulation of the coding and analysis processes, the display the identified concepts, the axial and selective coding and literature comparison (Riege, 2003). Member checking was instituted through the interviewee reviewing the transcripts before data analysis, which helped to improve credibility (Riege, 2003). Additionally, reflexivity was practiced during the process, through researcher journaling during the interview process (Riege, 2003; Roberts, Priest & Traynor, 2006).

Instrumentation

The research questions and sub-questions for the study were as follows:

R1: What are the lived experiences of participants regarding knowledge retention and transfer in the interorganizational community of practice?

R1a: What are the participants' experience of leadership knowledge retention and transfer in the interorganizational community of practice?

R1b: What are the participant experiences of networking within the interorganizational community of practice?

R2: What are the experiences of the participants upon leaving the community of practice?

R2a: What are the benefits and difficulties as experienced by participants?

Interviews were used to explore research questions. Open ended questions (see Appendix B) allowed participants to share their progression in the IT field, their experience in becoming involved in the community of practice, their perception of the terms knowledge retention and knowledge transfer and their experiences of both within the TLF and their respective organizations. The questions also encouraged inquiry into methods used by the TLF for knowledge retention and transfer, perceptions on how the IT community has benefitted from the TLF and observances of leadership development.

Data Analysis

Phenomenology involves providing detailed descriptions of the lived experiences of participants (Jurema et al., 2006). The Schutzian model was leveraged for social phenomenological data analysis and allowed for both descriptive and interpretative analysis of participant experiences (Schutz, 1967). Content analysis was an important tool to explore the data collected and to uncover themes (Fereday & Muir-Cochrane, 2006).

The steps used for the data analysis using Giorgi's (1997) phenomenological method to extract embedded meaning were as follows:

1. Read the data before analysis.
2. Divide the data into meaning units using participants' terminology.
3. Examine and redescribe meaning units using relevant disciplinary terminology.
4. Assess converted meaning units to determine which are essential to the phenomenon.

The first step was the descriptive analysis of each interview transcript. The descriptive analysis included the conveyance of the narratives of the participant experiences (Fereday & Muir-Cochrane, 2006). The narratives included the subjective insights related to the actions, structures and individual realities within the community of practice (Schutz, 1967).

The interpretative data analysis involved examining the social constructs that embodied participant realities (Schutz, 1967). The exploration of typified actions was used to provide insight into the social realities of the participants from a collective perspective in interorganizational community of practice (Kim & Berard, 2009). The interpretative data analysis allowed for the transition from an individual level of analysis to a view into the collective socially constructed perspective (Kim & Berard, 2009; Schutz, 1967).

The interpretative analysis involved the manual identification of themes and patterns from the transcribed interviews (Berg, 2009; Schutz, 1967). The themes and patterns were examined at from both the leader and trainee perspective and the patterns further compared between the groups for further insights (Berg, 2009). The collective

realities allowed for the reflection on the community of practice structures and social activities found within (Schutz, 1967).

Summary

The problem was the need for innovative knowledge retention and transfer strategies within the IT sector. Approximately one third of IT jobs might be at risk due to the aging of the workforce, which makes knowledge retention and transfer practices necessary (Buckley & Giannakopoulos, 2011; Carraway, 2011; Frey, 2010). Other economic factors such as outsourcing and career advancement opportunities might cause IT knowledge workers to change organizations (Qu et al., 2011; Tambe & Hitt, 2010; Whitaker et al., 2010). A need exists for IT professionals, and the loss of IT knowledge workers' knowledge is a significant problem (Buckley & Giannakopoulos, 2011; Hokanson et al., 2011). IT leaders require knowledge retention and transfer, and interorganizational methods might be leveraged.

Few researchers have addressed the problems identified in the study, and further exploration of knowledge transfer and retention practices in the IT sector was necessary, as even the number of students pursuing computing degrees worldwide has decreased since 2002 (Denning & Frailey, 2011). Access to tacit knowledge might enhance organizational performance and it is therefore important to retain and transfer knowledge (Bolívar-Ramos et al., 2011). The purpose of the qualitative phenomenological study was to gain a deeper understanding of knowledge retention and transfer practices within an IT interorganizational community of practice and to apply those practices within participant organizations.

Chapter 3 contained a description of a qualitative approach using interviews to collect data on the lived experiences of IT leaders and former IT trainees from companies involved in an interorganizational IT community of practice. Phenomenology might provide an in-depth understanding of the phenomena from both an individual and a socially constructed perspective (Dobrovolny & Fuentes, 2008; Flood, 2010; Schutz, 1967). Chapter 3 also included an overview of the appropriateness of the research design, population, sample, and instrumentation. The chapter concluded with a discussion on the steps used for data collection, analysis using the Schutzian method (Kim & Berard, 2009; Schutz, 1967), and study reliability and validity considerations.

Chapter 4

Results

The purpose of this qualitative phenomenological study was to gain a deeper understanding of the social phenomena of knowledge retention and transfer practices within an IT interorganizational community of practice. An in-depth understanding of such social phenomena might include both an individual and a socially constructed perspective (Schutz, 1967). Exploring knowledge retention and transfer as a phenomenon experientially lived in a social context, identified as an interorganizational IT community of practice, revealed findings that may be useful to IT leaders, IT students wishing to pursue a career in the industry, and those responsible for preparing the next generation of IT professionals.

Chapter 4 includes a synopsis of the evolution of the research design, research questions, the population sampling approach, and the demographic data collected from the research participants as per a collective case study design. The experiences rooted within the individual narratives of the research participants provided valuable data about personal and collective experiences of former TLF trainees and leaders. An overview of the data collection procedure precedes two levels of data analysis: 15 participant narratives and a thematic analysis illustrated with collective themes. Document analysis of three relevant pieces of documentation enhances the case findings.

Evolution from Social Phenomenological into Case Study Design

Social phenomenology involves exploring how individuals create meaning out of social interactions (Schutz, 1967). During data analysis, researchers examine the social components that represent the realities of the participants. The discovery of symbolic

actions provides a view into the social world of the participants' involvement in the TLF. Pursuing such a direction might also result in the development of multiple cases for study (Berg, 2009; Yin, 2009).

The data collection phase of the study included difficulties that obstructed the goal of presenting a social phenomenological study on knowledge retention in the interorganizational IT community of practice. First, obtaining the sample of ten IT leaders and ten former IT trainees proved difficult due to the availability and willingness of potential participants to volunteer to take part in one-on-one interviews. Seven IT leaders and six former IT trainees volunteered to participate in the study and two government leaders also agreed to provide their perspective, providing a sample of 15. While this fell within the range of sample sizes as presented by Mason (2010), both data saturation and data veracity was necessary to capture the essence of the participant experiences (Berg, 2009, Yin, 2009).

Upon obtaining the participation of the subjects, the depth and detail of their recollections of their experiences proved lacking for the purposes of social phenomenological data collection. While probing the interviewees would sometimes encourage them to look past the surface of what they did in the interorganizational IT community of practice to provide more depth into what those actions meant to them (Schutz, 1967), the quality of the recollection was low in many cases (Berg, 2009; creswell, 2013). It became apparent that the data collected would not provide the necessary data required to explore how they created meaning out of their social interactions (Schutz, 1967).

The data collected was not without merit. The study subjects provided useful information about the interorganizational IT community of practice and they had distinct thoughts on the benefits and role it played within the Bermuda business community. Looking at the interviews from a case study perspective, each interview could be considered a part of a collective (Berg, 2009; Yin, 2009). The collection of data from the IT leaders, former IT trainees and IT government leaders could provide an understanding of knowledge retention and transfer within the interorganizational IT community of practice through the comparison of the experiences of the participants and as groups within the collective (Berg, 2009; Putney, 2010; Yin, 2009).

The evolution of the study into a collective case study also allowed for an expansion of the data collection points (Berg, 2009; Guba & Lincoln, 1981). The TLF leadership provided access to documentation that would provide additional insight into the operation of the interorganizational IT community of practice. The documentation also included materials that included the perspectives of TLF leaders and trainees.

Research Questions

The research questions were formed using the problem and purpose of the study, the theoretical framework, and findings from the literature review. The function of the research questions was to guide the data collection and analysis process. Even as the study evolved into a collective case study, the research questions and sub-questions remained the same:

R1: What are the lived experiences of participants regarding knowledge retention and transfer in the interorganizational community of practice?

R1a: What are the participants' experience of leadership knowledge retention and transfer in the interorganizational community of practice?

R1b: What are the participant experiences of networking within the interorganizational community of practice?

R2: What are the experiences of the participants upon leaving the community of practice?

R2a: What are the benefits and difficulties as experienced by participants?

Population Sampling Approach

The identification of participants resulted from a purposeful homogeneous sampling approach because individuals involved in a particular group, the TLF, were desired to maximize the ability to gather data to answer the research questions (Tuckett, 2004). The impetus for the formation of the TLF was the acknowledged issue of a lack of local IT talent. Returning IT students who found it difficult to secure employment because their IT program of study did not contain skills in the areas of local companies' greatest need compounded the issue. The core objective of the TLF is to undertake programs that might result in a qualified talent pool of IT professionals accessible by both private and public sector Bermuda-based organizations. The TLF program has been cultivated into a community of practice, with the TLF leaders seeding the program with the encouragement of organizational participation, the development of tacit learning opportunities, and the creation of access opportunities to "pockets of expertise" (Wenger et al., 2002, p. 14). The TLF has developed an environment through which participating organizations and the individuals participating in the community should realize both short- and long-term value.

In the study, the sample of participants was selected from the overall population of IT leaders and former IT trainees associated with the TLF. According to Mason (2010), sample sizes for case studies range from one to 95 subjects, with a mean of 36. The numbers are a guideline, and researchers should understand saturation in relation to their study.

Research Subject Demographics

The TLF consists of 32 member companies and 28 former IT trainees. Seven IT leaders, six former IT trainees and two government leaders were interviewed for the study. Data saturation occurred after the analysis of the fourth leader and fourth participant interviews. Five more research subjects were interviewed to verify that no new themes would emanate from the data. Triangulation of the data was reinforced by interviewing two senior-level government leaders who had responsibility for IT and were familiar with the TLF program (Homburg, Klarmann, Reimann, & Schilke, 2012; Maria & Kiger, 2005; Riege, 2003), which brought the final sample size to 15 research subjects between April 23 and October 11, 2012. Document analysis of three pieces of TLF materials, which included two articles and a 2012 Annual Report provided additional data sources for the study (Riege, 2003; Yin, 2009).

Numbers served to protect participants' identities. Demographic information was collected on each volunteer, including their gender, age range, TLF role, time in their current role, and years in the industry (see Table 1).

Table 1

Demographics of Study Participants

	n	%
Gender		

Male	11	72
Female	4	27
Age		
18-25	4	27
26-45	5	33
46-65	6	40
TLF role		
Trainee	6	40
Leader	7	47
Government leader	2	13
Time in current role		
0-11 months	2	13
1-2 years	5	33
3-4 years	5	33
5+ years	3	20
Years in industry		
0-5 years	4	27
6-10 years	3	20
11-15 years	2	13
16-20 years	1	7
21-25 years	1	7
26+ years	4	27

The demographics of the study participants indicated that there were more male than female volunteers in the study. It did transpire that within the female category, two were trainees and two were leaders. In the male category, four were trainees, five were leaders and two were government leaders.

Most of the trainees were between the age of 18 and 25, with two between the age of 26 and 45. The seven leaders were between the ages of 26 and 65. The government leaders were included in the 46 to 65 age category.

The timeframe in the current role also reflected the trainee and leader positions. The six trainees had all been in their current role for two years or less. The leaders and government leaders had been in their current role for three or more years. On the other hand, while most of the trainees had been in the IT industry for five years or less, two of

the trainees had been in the industry between six and ten years. All of the leaders had been in the IT industry for at least six years.

Data Collection Experiences

Data collection: Interviews. Data collection involved face-to-face interviews and an analysis of relevant documentation. Interviews allowed the participants to describe their experiences in the TLF program, and in speaking with the researcher, context was created, as experiences were shared and the participants were able to reflect on the meaning of those experiences (Flood, 2010). The study included two interview guides. The interview guide for TLF leaders contained 17 questions (see Appendix G), while the TLF participant interview guide consisted of 16 questions (see Appendix H). Participants shared their lived experiences around events involving the phenomena of knowledge retention and transfer and the environment of the TLF. Story paths were often linear, although some nonlinear story paths emerged during leader interviews.

The interview guides included common questions to bring out experiences and memories from the TLF Internship Program experience. Twelve of the 15 interviews had a conversational flow, with the participants often answering further questions without being asked. These interviews included many descriptions of situations and personal examples considered meaningful to the volunteer. Two interviews had a strict question-and-answer flow, with less of a conversational tone and more prompts to the participants. In one case, the researcher omitted questions when the participant became uncomfortable with particular questions. In the other case, questions that the participant could not speak on were omitted, as agreed with the volunteer.

In the two cases where the participants did not transition into a conversational flow, both requested explanations on the questions. For one of the participants, the second half of the interview transitioned into a more conversational mode. The other volunteer appeared uncomfortable with the process but was able to share stories with great meaning with prompting.

Most of the data collected during the interviews was guided by the question guide, even if all of the questions were not asked during the interview. Upon review, even in those cases the questions were usually answered through the narrative. During all the interviews, the researcher was an active listener whose main purpose was to expand the conversation. The questions and comments were in tune to the pace and participation of the volunteer. As each volunteer shared his or her experiences with the TLF, both through the trainee program and in their organizations, the researcher made short notes in her interview guide regarding the questions the participant was responding to. In some cases, the researcher would take a piece of the information a participant had shared to encourage him or her to expand upon the topic further.

The interviews ranged from 20 to 70 minutes for 14 participants. Most trainee-interviews averaged 30 minutes and leader interviews averaged 1 hour. Stories were often personal, and the stories from leaders almost always referred to their background.

Data collection: Document analysis. Documentation includes documents and records and physical artifacts (Creswell, 2013). Documents and records include "a wide range of written, visual, digital, and physical material relevant to the study at hand" (Merriam, 2009, p. 139). Documentation, in combination with the interview data, helps to deliver a complete picture of the phenomena being studied (Creswell, 2013; Merriam,

2009). Once collected, documentation must also be analyzed a manner that enhances confirmability, dependability, credibility and transferability (Riege, 2003).

The protocol, or data collection sheet, originated with the research questions, followed by the determination of a limited number of categories and definitions for the purposes of this assignment (Altheide, 1996; Mayring, 2000). Table 2 includes the categories and definitions and related codes that were identified through the interview component of the study for the data collection sheet (Mayring, 2000).

Table 2

Categories, Definitions and Pre-set Codes

Categories	Definitions	Pre-set Codes
Identity	Learning changes people	career; potential; environment; contribution
Meaning	Learning through experience	development; exposure; communication; motivation;
Practice	Learning through doing, which entails sharing resources and perspectives and embodies mutual action	motivation; feedback; interaction; development
Community	Social configurations that allow individuals to belong, create, and share what they have learned	access; relationships; support; network

Data Analysis Process

Interviews. The recorded interviews were transcribed into written transcripts within 10 days. Each study participant received his or her transcript to review for accuracy. The participants were encouraged to edit their transcript based on their understanding of what was originally stated during the interview. The transcript was then

used in the data analysis. Three of the 15 participants returned their transcripts within a week, 11 within a month and one participant returned a transcript 2.5 months later. Three participants edited their transcripts. One participant summarized information in the transcript that the participant had provided in the interview. The information summary contained the participant's many experiences from the interview, but the participant considered it long winded. Two participants corrected their transcript for grammar, and one explained acronyms.

The transcript review allowed for member checking which reduces the potential for researcher bias. The review activity also allowed reinforced trust. After they signed the informed consent form, the interviews were audio recorded and then transcribed into text. The participants understood the study would include numbers to protect their identity. Upon review of the transcript, they either provided agreement to use the transcript as originally transliterated or with edits that they made. The transcripts were then considered raw data ready for analysis.

Analysis of each case was then performed using the thematic analysis process as outlined by Braun and Clarke (2006). The steps were summarized as:

1. Review each transcript and note ideas
2. Generate initial codes by identifying interesting features
3. Search for themes by collating codes in relation to the codes in the particular data sets
4. Review themes in relation to codes and data sets and create a theme map
5. Define and name themes by refining the specifics, the story of the analysis and relate the themes to clear definitions

6. Produce the report by selecting compelling abstract examples, relating back to the research questions

Document analysis. Content analysis is an unobtrusive, inexpensive and unbiased method to explore data (Berg, 2009). The data from the two TLF articles and the 2012 TLF Annual Report were reviewed and the data coded using the pre-set codes identified in table 1. Frequency of entries were counted and similarities and differences in each category were then identified (Altheide, 1996; Berg, 2009). Summaries were created and combined into typical cases and exceptions (Altheide, 1996; Berg, 2009; Mayring, 2000).

Case Narratives

Each participant shared a tale of his or her experience in the TLF in response to the interview questions. The participants are represented using numbers. Recognizable details were removed from the summaries, but the fundamental nature of the narratives remained. The participants reviewed their descriptive summaries for accuracy and meaning and approved inclusion in the study.

Trainee: T1. T1 was not working in the IT industry when she heard about the TLF. She wanted to get back into the IT industry. She registered for courses at the Bermuda College and through her course lecturer learned about the TLF Internship Program.

T1 noted the program included many topics, and because there were exams throughout the program, the participants had to study and through that process retain knowledge. She said the topics were not in depth, but the courses gave the participants an overview of what the subject areas were like. Due to her exposure, she was able to go

on an interview and have some "familiarity with a topic if it came up in the discussion." T1 explained the program exposed her to many IT areas. This, T1 said, allowed participants to retain a basic understanding of and appreciation for the many areas that comprise the IT industry.

In her work experience, T1's introduction to the organization that she worked for during the summer involved her "shadowing an IT professional for about a week before being given a project." She would then repeat this process in another part of the organization. T1 found some of the areas that she worked in a bit "overwhelming" because of the in-depth technical nature of the work. She did believe that through the model of observation followed by doing, she was able to "understand" at a basic level the various roles within the organization.

T1 stated she was immediately able to transfer her TLF experience to her place of employment. She provided an example where her team project during the program required they test and document an application that they had developed. She then had a project at her job that required her to test and create documentation on how to use an application and was able to pull from her team project experience.

T1 felt the program helped to develop her leadership skills to some degree. She recalled that the team project required her to take the role of leader when there was a need for it within the group. She found she was able to motivate her team members to get things done when she was seen as the leader.

After the program, T1 finished her degree and began looking for a full-time IT job. She found the process interesting because when she read the job descriptions, she would think, "Yes, I can do that. I can do some of that. I can do all of that, and if don't

know it yet I can definitely learn how to do that." She said the networking skills that she gained from the TLF program helped her in her job search. She would not have met her current boss or had the opportunity to interview with the company if she had not been a part of the program.

Trainee: T2. T2 learned about the program from one of the leaders when he was exploring his college options. He was told it would be a good summer trainee experience and to come to the Christmas networking event. At the networking event, he was introduced to many other leaders and was impressed by the presentation that evening.

T2 noted knowledge retention takes place if "someone teaches another person something either directly or indirectly, and the person receiving the instruction is able to keep that knowledge and then do something with it or teach others about it." He admitted his definition of knowledge retention involved an element of knowledge transfer. T2 believed the coursework helped him to better define what he wanted to do in university and as a career. The combination of the courses and his trainee work with the company that he was assigned to showed him that it was worth focusing on an IT area that he was "not too keen" on during his previous year of university courses. T2 stated having the IT professionals giving their lectures and "sharing their experiences" on the job, along with what they have done to build their careers, provided a different dimension to the courses that he had previously experienced in university.

On the job, T2 enjoyed seeing how applications and systems tied into the "actual work of the organization." He said it changed his view on how he wanted to build his career. He saw how the IT component of the organization interconnected with other aspects of the business, from finance to customer-facing activities. He came to

appreciate how everything had to mesh together to work smoothly. T2 shared that, during the program, the IT professionals' perspective often gave him a better understanding of what the job entailed. After he was on the job, he could see how the theory in the classroom played out.

T2 believed the TLF program transferred knowledge very well because the courses were taught by IT professionals who worked every day in the field and then came into the classroom to teach the participants. He said the professionals were "senior software developers, CIOs [chief information officers], senior vice presidents, and other people who have worked in the IT industry" for very long time. He shared,

> The TLF is a great opportunity because it doesn't just teach you the different topics that senior level IT people need to know. It also provides you with connections and mentors that are there to answer questions and they make time to speak to you, which is a great part of the TLF.

T2 also talked about how he gained knowledge in the organization that he worked for. The organization created cycles in which he had to work in different areas. His supervisor ensured each cycle linked into the next area so he was "able to see in the end see how all of the IT sections worked together to deliver good service" to the customer. When a cycle started, he would be given an overview of the system that he would be working on and then he would observe how the daily routines took place. He was then given tasks to perform and then eventually he was given projects for which he was responsible.

T2 had arranged an excellent job opportunity with an organization that he learned about through the TLF program in the year he had participated. One of the IT

professionals who presented one of his courses caught his imagination and he spoke with that professional after the course. He then networked with the organization during TLF's summer networking event and learned about a position that was available. T2 interviewed with the company and secured the position.

Leader: L1. L1 had an extensive background in the IT field. He entered the workforce straight out of high school. Initially he worked up through the IT department organizational chart under a leader who communicated how he wanted the department to grow. L1 did not take the technical route in his career development. He started his career as a systems analyst, which allowed him to work between IT and business. He enjoyed the creative nature of the role and the ability to see what the end result was going to look like for the organization. He went from systems analyst to project management and then into leadership positions with responsibility for entire groups and departments. He was able to gain experience in different industries and follow a path that was "fascinating for his development." L1 said he tells people that his experience is "invalid in today's IT industry," and he doubts that it could be replicated. For example, he is not able to hire somebody for his organization without them holding at least a technical certification. If he were applying for a job out of high school today, he would need either a technical college diploma or a 4-year degree. L1 noted there was no opportunity to develop someone with no background in IT in his organization because there was no budget to have trainees coming out of high school and "teaching them from scratch." When he left high school, he "had no clue" as to what he wanted to be. That position would no longer work in his favor in the working world.

L1 was one of the first people involved in the development of the TLF. He said many IT leaders were having difficulty finding IT people to hire for their organizations. This meant going "off island" and finding qualified IT professionals. Additionally, it was not clear and was difficult to find out what young IT people were studying overseas. It was hoped the TLF would make a difference in these areas.

L1 teaches a course for the TLF program. He started his sessions assuming no knowledge of the topic from those in his class. He then tried to break the class down into what the topic was about, what the trainees would actually use in the working environment, and why they had to grasp the information. He wanted the trainees to understand the point of the course and the relevance of the material.

In his organization, L1 has had two TLF trainees work with him over the preceding 4 years. One was not a great success, and the other was recently hired full time. The former participant who was recently hired demonstrated a high level of ability during the TLF program, which made the trainee an interesting prospect for L1's organization. L1 shared that, in this former trainee's short time with his organization, the individual demonstrated the ability to "pick up new things quickly," which is an attribute the individual demonstrated in the program. The future of the community of practice is in its reputation in the IT community, in trainees who have found satisfying jobs due to their experiences and through organizations who have had the ability to hire "cream of the crop" talent.

Leader: L2. L2 entered the IT field with a technical specialization and then got involved in project management. Working in project management has allowed her to gain experience in many different aspects of IT. As a project manager, she became

involved with the TLF. She was involved in the facilitation of the initial meeting of public and private sector organizations. She spoke about how the TLF began with 30 CIO level individuals who identified a missing link in IT education for Bermudian talent entering the industry. She gathered their feedback and input into how the program should be developed, the result of which became the TLF and the trainee program.

L2 talked about a trainee from a previous year. He came into the program with knowledge gained from previous work experiences and his time at university. He also was "self-taught in many areas of IT and did a lot of research on his own." She said during his time in the TLF program, she was able to see that he brought a lot of his experiences into classroom and team discussions. She was able to also see how he transferred knowledge to "benefit his team members" in their activities in the team project and also through other interactions.

L2 had seen former trainees join TLF member organizations and integrate well into their new roles. She gave an example of a former trainee hired to work in a particular area of a TLF member organization. His employer required someone to work in a specialized area that this former TLF trainee had developed an interest in when he was introduced to it during his TLF coursework. Upon his initial work with the IT professional in charge of this area of the organization, he showed aptitude in learning the concepts and began to "make strides towards meeting the needs of the organization." This former trainee had been able to create new experiences, gather new information, and develop new knowledge.

L2 said there is a role for the TLF to play in the development of future leaders. She found most trainees "do not understand what leadership means." She gave an

example of some former trainees who believed they should be IT leaders immediately after graduation. She said she had to explain to them,

> It takes time to understand the breadth and depth of what an IT leader needs to do to serve the organization in which they work.

She also gave an example of the importance of supporting emergent leadership. L2 spoke of a former trainee who came into the program not showing leadership qualities but "blossomed as the program progressed." She therefore believed recognizing leadership potential should be inherently a part of the TLF program. In the case she described, L2 believed the TLF's role was to" mentor them," to facilitate the transformation process. She noted it was important that the TLF "play a role in modeling, nurturing and developing leadership attributes" so that these participants could "aspire" to take leadership positions in the future.

L2 spoke about former trainees who have taken full-time positions within the industry. She had interacted with some of them in the work environment, and she was proud of what they were bringing to their working roles. She found many of these former trainees went beyond what was expected of them in their roles, which was something that really should be noted as a reflection of the people who participate in the TLF program. She said the TLF tries to instill in the trainees that "the more you give of yourself, the more you do, the more you get noticed, and ultimately this aids your career."

Trainee: T3. T3's introduction to the TLF Internship Program came from his instructor at the Bermuda College and then again during a career fair. He then attended the TLF's Christmas networking event and met one of the leaders who had already heard about him. He applied to the program and was successful in securing a spot.

T3 currently works as a business analyst with some project management and web development responsibilities. On the job, T3 has had the opportunity to have a TLF trainee work under him. He made it a priority to share what he was doing regularly with the participant. He felt it was important to provide learning experiences. He also worked under a senior IT professional in the organization who he initially met when they taught a session for his TLF trainee group. In working with this professional had many hands-on learning opportunities that he supported with knowledge gained from what he had learned about the subject during the TLF program and additional independent study. He found he was often "pulled in" when it was believed he could gain from observing or performing a task. He understood he was being considered as either a "backup or replacement" for this senior IT professional in the future.

Trainee: T4. T4 was a recent graduate and was looking for a job when he saw the TLF Internship Program as an option to be exposed to potential job opportunities while learning about the industry. He was interviewed and accepted into the program and then was offered a job soon after he was accepted. His organization allowed him to participate in the TLF program during that summer. He believed he was able to immediately apply much of what he learned during the summer at his full-time job.

T4 found the information that he learned through the TLF program was easier for him to retain. There were "many touch points to refer back to such as lecturers, practical experiences, visits to various workplaces and using the knowledge on the job" that provided him with relevance to the concepts. T4 explained that as a person who learned best by doing, the ability to apply what he was learning in class on the job and working on the team project made him feel that he was getting a lot out of the program.

T4 found it necessary to be able to work effectively on his own or on a team within an organization. Within the team context, the TLF program required the trainees to come together and work with everyone's strengths and weaknesses to deliver the desired project outcomes. He believed the TLF program helped him learn how to work to push himself individually and, as a team member, how to communicate in the team environment and how to deliver on the objectives as a group.

Leader: L3. L3 had more than 30 years of experience in the IT field. He started as a programmer and progressed through analyst and systems developer roles and eventually took a project management position. At the time of the interview, he was a department head in his current organization. Over the years, L3 enhanced his project management skills and came to appreciate process management and its function in successful IT projects. He had been able to help many people in the organization integrate IT into their business processes to help them to meet their business needs.

L3 has had two trainees through the TLF. The first experience was positive and he attributed that to the trainee's maturity and ease of adapting to new tasks. The second trainee provided a less positive experience. He noted this was perhaps due to the lack of experience the trainee brought to the job, which made it difficult to perform assigned tasks.

L3 noted the TLF program is a good idea because he saw the program as using the apprenticeship model as its basis. He reflected on how the apprenticeship model was a very big part of the Bermuda IT community years ago. He explained,

> I think if you have people who have got the aptitude, and not necessarily the academic qualifications, you put them in an environment where they're learning,

(a) about the profession that they're in, and all the information that goes with that and (b) the ethics of working within a team, and good practices of like coming into work on time, and just stuff like that, dedication.

L3 gave an example of his first TLF trainee who was able to step into a role because a professional in his department was leaving. He had had the trainee work directly with the individual who was leaving so the trainee might understand the job responsibilities. He even provided a video camera to allow the trainee to record interactions and processes, but the former trainee did not find it necessary to use it. This exposure allowed this trainee to see what was required to "take on the job" and also allowed him to determine whether the person was willing to do what was necessary to fill the role on a full-time basis.

L3 saw IT as a craft a person has to learn. IT professionals had to be able to operate effectively in an environment of technical interaction and human interaction. He gave another example of his first TLF trainee, whom he eventually hired. He immediately introduced this individual to the primary work of the department and then provided training opportunities. He found the individual willingly became immersed in the work and also looked for opportunities to further learn about the tools used by his department.

L3 said the TLF had the potential to develop leaders because there was now a focus on recruiting individuals who had potential. L3 shared that his first trainee came to work for him with a particular area of experience from a university degree program. That trainee continued to work in that area upon being hired but also took on other tasks after showing the aptitude to do more. He admitted to giving the trainee varied tasks to see

what they were capable of. By giving the trainee the opportunity to develop skills in other IT areas, L3 thought it would help with that individual's professional development and in the long run his department as well.

Because L3 hired a former TLF trainee, he was able to describe their transition into his organization. He not only had been "throwing stuff at her" to see what else she may excel at, but he also attempted to help her to strengthen her natural abilities like tracking tasks and time management. Ultimately, he believed that he was helping her to "refine her skills".

L3 noted there should be less of an emphasis on academic requirements and more emphasis on putting people where they can learn experientially because they could meet the academic requirements later. He believed that would create the ability to capture people with great aptitude who may not have had the opportunity to go to university. L3 concluded by saying the unique nature of the IT environment is that individuals who work in IT expect change as a part of the culture, but noted one of the problems of being an IT person is that many organizations that they work within do not like change. IT professionals must understand both cultures but be willing to take risks. IT professionals who do not take risks do not learn or move things ahead.

Leader: L4. L4 did not have an IT degree, but had many years of industry experience with IT organizations. In Bermuda, her initial role in her current organization was in sales and marketing before she took the general manager role. She had been a part of the TLF since its inception and considered it to be a valuable organization through which the IT community benefitted. She saw her organization as a "good corporate citizen" who maintained an organizational culture that developed IT trainees and

encouraged them to come back and work for the organization. L4's organization has had good success in grooming and hiring talent with both the TLF and its own development program.

L4 described how she worked to help employees do things by instinct or "reflex." In the instance of a new hire, the professional was given a buddy to work with initially in a shadowing capacity to encourage the buddy to integrate into the organization. The professional's integration to the organization also depended on his or her interest in learning, dedication to the role, and ability to contribute to the organization quickly. L4 said they tried to make the introduction to the organization as easy as possible and to provide positive reinforcement after the new hire began meeting organizational expectations. She noted this instilled confidence and motivation in the professional and helped to push the individual to the next level.

L4 said that looking at the TLF training process, she saw that many of the soft skills sessions such as the customer service and presentation skills training gave the trainee new skills and also increased their confidence over the summer. She gave examples of the three trainees who worked with her organization. In each case, she described how they grew during the program, whether it was by becoming less shy, increasing their confidence in working with others, or developing their professionalism. She shared that it was not easy: "I find that the trainees are not comfortable in [the networking] situation. It's a really big effort for them to go and approach someone and encourage conversation."

Trainee: T5. T5 learned about TLF program when it was piloted into 2009. He was interning within the IT industry and was excited about the opportunity the TLF

provided IT trainees. However, he did not apply to the program until he had completed his schooling. At that time, one of the TLF leaders encouraged him to become involved in the program as his entry point into the industry.

T5 described a TLF course that involved positive reinforcement that encouraged him to work through a difficult topic area. In the case of that course, the instructor made working through the course content fun. This opened the door for T5 to the range of information that he needed to understand the topic.

T5 did not enjoy learning in a classroom environment. He did find that many courses in the TLF program allowed him to learn in a fun, often practical, way and understand other professionals' experiences. He was therefore able to take more from the program and developed a better appreciation for learning.

On the job, T5 had to learn a new IT system. He found he was able to pull knowledge from his TLF customer service training and provide a "professional response" to end users. He said the "system users were his clients" and he "set a very high service level" due to what he learned through the TLF. He also shared that he found it important to keep his "social life separate" from his professional life to deliver consistently good service.

T5 defined knowledge transfer as the ability to take information you have learned over time and pass it on to someone else who wishes to learn from you. He provided an example of a TLF trainee who is working under him. The trainee's learning style was different from his. He therefore found he had to adapt the way that he shared his knowledge and experiences to meet their learning needs.

T5 believed the TLF changed his perspective on learning and leadership. He now understood nobody stops learning, no matter what their level in an organization. He noted some may "feel that because they were in a senior position that they were automatically leaders." He disagreed with this position and explained that through his interactions with leaders during the TLF program, true leaders "inspired you to follow them." He stated true leaders showed him regularly that they were "committed to both him and the organization." A true leader communicated to him why his role was important to the organization and the industry. He said a true leader showed desired behaviors in all their interactions and "deserved . . . their respect because of their dedicated work."

T5 spoke of a particular TLF leader who inspired him. He personally felt it important "not to let this leader down." Although T5's primary motivation was to improve in the TLF program, he also felt it necessary to "do work that reflected positively" on this leader who got him involved in the program. He refused to let this leader down even after graduating from the program.

Leader: L5. L5 had almost 30 years' experience in the IT field. He had worked in many aspects of the industry, including infrastructure, systems engineering, systems programming, project management and senior management roles. He had both IT vendor experience and business organizational experience. His participation in the TLF was motivated from a few perspectives. First, as head of IT in an organization, he was having a difficult time finding ways of introducing young workers into his business environment. He found they were "coming out of school with insufficient basic professional skills and unrealistic notions of what was involved with careers in IT." He also felt a personal need

to be able to "put energy back into the community and doing some good in the development of young people." He was an advocate for mentoring programs and believed they were developmental both professionally and socially. He also believed it was important for his organization to be a leading participant in such a program because it was a significant part of being a "good corporate citizen."

L5 explained the term knowledge retention had changed in terms of how it is now exercised. He said prior to the modern technology revolution, and particularly the Internet revolution, knowledge retention would have simply been seen as "the consumption, digestion and the ability to easily regurgitate important knowledge." He considered knowledge retention to be a case of "knowing where to go, how to intelligently compile queries or searches, how to go about analyzing that information, synthesizing it, and turning it into useful knowledge that you can apply in your day-to-day work activities." He said that you "no longer have to have it stored in the human memory banks at the back of the human brain." He believed it was "practical to finding what you need to do a job, synthesizing it and turn it into useful knowledge that you can then succinctly apply to whatever it is you are trying to do."

L5 then gave some examples. In his organization, the knowledge of senior professionals is taken and used as a development tool for young professionals. They use knowledge bases and other such tools as part of their support environment. He believed the methods would continue to evolve and found that they continued to improve the return on investment.

L5 defined knowledge transfer as the imparting of knowledge from one source to another. He then expanded his definition by a saying it was important that the

information be given "context." He gave an example of a former TLF trainee that he personally mentored. He said in addition to receiving knowledge in the classroom environment, it was important to develop a mentoring experience that included messages tailored to the mentee. Contextual feedback was most critical as the professional had to make the advice relevant. He described a mentoring situation, where his conversation with the former trainee was almost "parent to child" due to the generational differences. Upon connecting at this level, he was able to share his experiences in a way that made it relevant to the former trainee and in the process "gained some understanding of how the trainee perceived their work environment." L5 found for knowledge transfer to be successful, the methods must be customized to those involved and the circumstances.

L5 did not see the TLF Internship Program as a leadership develop program. Instead, he saw it as an entry point for those keen to get into the IT industry. He believed that the TLF created a foundation for growth. He also shared that to focus on the concept of leading people would be too narrow a focus and only a small part of an IT career.

L5 then talked about the nurturing environment that the TLF had created for the trainee program. He described the desire for the program to provide the participants with a teamwork experience. He did feel that it was possible for a leader to "evolve naturally" from such an environment. L5 said it was interesting to see how trainees learned from their experience working with others. It allowed the trainees to show their technical and soft skills, maturity, dedication, ingenuity, and the emergence of perhaps the next generation of IT leaders.

With TLF graduates in the community, he thought many organizations had recruited trainees who were better prepared than the talent pool was even 5 years ago.

His personal experience talking with those who had hired former TLF trainees was that they were very happy with the quality of the hire. He said those former trainee had "hit the ground running much faster than they would have otherwise" and the organizations have recognized that fact. He also noted the TLF provided something of a "reality check" to former trainees and potentially to some of the community stakeholders. L5 said, "A career in IT was not guaranteed just by completing a couple of exams or getting a certification." He hoped that the TLF would continue to "successfully dispel some of the myths that were out there about IT careers" and introduce awareness about what is needed to be successful.

L5 indicated as knowledge gets more "sophisticated," organizations would also need to be able to "learn from trainees" who are working on cutting-edge IT technologies at their colleges and universities. He said innovation, whether it be new ways of thinking or new ways of approaching technology, may be coming through the academic channel more readily and that organizations will need to capture that new knowledge. He noted some trainees were coming from some of the leading technology schools around the world and the "TLF must look at ways to extract some of that knowledge." L5 saw value to the TLF organizations if the TLF program could also provide knowledge enhancement to the corporate stakeholder groups. He saw the TLF as having the potential to be an ideal environment and contended at some point the TLF would become a gateway or a potential root source for innovation.

Leader: L6. When L6 went to university, he did not initially major in IT. Due to his exposure to IT via his roommates, he eventually developed a passion for it and, upon changing his course of study, graduated at the top of his class in IT information

management services. He worked both in Bermuda and overseas to gain experience and developed a satisfying IT career.

L6's involvement with the TLF was due to his company's CIO sponsoring the initiative and putting trainee s into his area of the organization. One of his former TLF trainee s was now an employee within the organization. When first starting with the organization, this person was assigned to L6, and he showed them technical and customer-focused procedures. He stressed the importance of customer service and "going above and beyond" to serve the end user. Recently, the former TLF trainee performed a significant customer service action recognized by the organization. He believed this was due to the customer oriented culture that the organization promoted regularly, and over the years they saw that everyone in the organization "lived and demonstrated" what was expected.

L6 then talked about the influence that the TLF program had on this former trainee's work. In particular, he pointed out the individual's ability to work well in a team environment after their training. He shared that she came back more vocal with great ideas and respect for others.

L6 described teaching his three former trainees how to perform what would be their assigned tasks in a hands-on manner. He found they were then any able to go and do many things on their own and show that they understood what they had done. He considered practical experiences the best way to transfer knowledge. He saw the book knowledge behind why something works as important but saw the practical experience as "reinforcing why it is important" to do the task.

L6 then spoke about the importance of mentoring in knowledge transfer. He gave an example of having a former TLF trainee who was able to mentor another TLF trainee. Because the first trainee had gone through the program, it was possible to give more "pointed instruction and feedback" to the new trainee. Due to their team environment, communication was embedded in all processes, and this helped in exposing the new trainee to additional opportunities.

Leader: L7. L7 had worked in the IT field since he was a teenager. He always had a passion for technology and a great appreciation for both practical and school-based learning. He was very entrepreneurial, and enjoyed mentoring and teaching upcoming IT talent, in addition to continuing to feed his development and learning about new technologies. Initially L7 was brought into the TLF to teach the trainees about emerging IT concepts that were not a part of the curriculum. He was also invited to talk to the trainees about his experiences in the IT industry because he had been successful in striking a chord with past classes.

L7 said that knowledge retention as a term had evolved. He said that if he "were to answer that question 10 years ago, it would have been the amount of working knowledge that he had on a particular product, programming language or a skill set." Now he said it was more on the "spectrum of wisdom and experiences that one had over a period of time and having a gut feel for how a situation is going to play out."

When he spoke to TLF trainees, he broke the importance of using knowledge into two parts. Part 1 involved "understanding the problem they must solve and the desired outcome." Part 2 encompassed "the tools that were available to them." He gave an example of a particular lecture he had given. He said the servers were down and they

needed to get them back up and get the business operational. From a problem and outcome perspective, using one's knowledge to "distill and understand" both was important to determine the course of action one should take. He then discussed how to resolve the simple problem and outcome in different ways using different tools. This was where the knowledge relates to "knowing the industry, methodologies and technologies to determine what could be done to solve the problem." He found this to be a rewarding basis of discussion with the TLF trainees.

L7's definition of knowledge transfer involved the concept of documentation. He discussed documenting an experience, including the situation and the solution. He said one can document how he or she came to a solution, and then someone else can implement that solution if necessary. He said the way he learned influenced his definition. He appreciated experiences that related to the theory.

L7 talked of how the industry had changed. He noted in the past IT was like "the engine room and nobody went there." IT just produced what it needed to produce and professionals worked in isolation. Today IT is "part of the business group." It is strategic and the trainees going through the TLF must understand that this requires that they be "hybrids, understanding IT and business." It was important to L7 that they "speak both languages well" because that will be the expectation of the organizations that they work for. L7 thought the TLF would "serve [trainees] well."

Trainee: T6. T6 learned about the TLF Internship Program in a newspaper article and attended a networking event. She met many of the leaders and sought out additional information about the TLF program as she neared graduation. Upon starting a

job at a TLF member organization, she was encouraged to apply and was accepted into the program.

T6 explained that when she was in the TLF program, she really enjoyed the courses where the instructors worked to help them understand the "relevance" of what they were being taught. She gave the example of a lecturer who used a lot of examples from everyday activities like traveling and such, which allowed the trainees to be able to "lock onto that information" and "pull examples from their own experiences." The lecturer was then able to "transfer the concepts to the technical topic" that they were to learn about. She said that this method allowed her to "tie the whole thing together" and to "create visual pictures to really understand" what was being taught.

T6 believed the most important takeaway from the TLF program for her was communication. She said that she was the proverbial IT introvert. The requirement to give presentations and to network with others was somewhat difficult for her to perform. She found she still had a hard time expressing herself in the work environment but with encouragement from mentors, she was able to work through her thoughts and make her team members understand her contributions by using some of the methods that she learned in the TLF program.

> I feared speaking to superiors. I would say TLF helped me with my communication and definitely helped me decide which career path I wanted to go to. The benefit afterwards was getting into conversations with my coworkers and when they speak about the different methodologies. I was able to engage in those conversations and I guess even motivate them to do things that I've learned out of TLF.

Government leader:– GL1. GL1 was a cabinet minister for the Bermuda government. He stated the TLF helped IT trainees to experience leadership ideals as a result of the trainees having direct access to model leaders during the course of the program. He saw mentoring relations occur due to the networking focus of the program and, depending on the strength of the relationship; he noted knowledge transfer was "intensified." He found TLF tasks to be "solution based" and encouraged the "testing and stretching of the TLF trainees' minds and creative dexterity." GL1 pointed to the visible outcomes each year, including "confidence enhancement" in the participating trainees.

GL1 noted perhaps the single most important experience in the TLF trainees' lives was their "immersion" into the respective and varied business cycles of the participating organizations and the practical application of experience which he considered of immense value. The TLF was successful by combining practical experiences with basic teaching or learning of the "rudiments of IT education" and an "exposure to what the entire industry had to offer." The effectiveness of the TLF Internship Program was through this contribution to the value chain of the trainees' experiences.

GL1 explained the "dynamic exchange of ideas" from young, passionate, and bright IT stars with dedicated leaders and professionals in the business environment forged an opportunity to build a bright future for the IT industry in Bermuda. He indicated the TLF must keep the momentum and continue to engage IT trainees who are willing to "create new boundaries" in the work environment. GL1 said that would create and maintain a "beneficial two-way street for information exchange" and opportunities to

research innovative developments, "stretching both the trainees and the organizations' capabilities." He saw an opportunity for collaboration between the trainees and businesses that would result in the creation of fresh ideas for the business community in Bermuda.

Government leader:– GL2. GL2 was senior civil servant responsible for strategy in the Bermuda Government. GL2's position was that the TLF provided trainees "early exposure to some of the wider aspects of the ICT [information and communication technology] industry." The components of the TLF program provided trainees with insight into IT careers that were and would be relevant to Bermuda. The community of practice was also developed to provide trainees with the opportunity to "engage with senior ICT professionals in both a classroom environment, as well as in the workplace." He noted the trainees entered the program knowing that the partnership between the government and the private sector was a reflection of the IT industry's total "commitment" to their development.

GL2 described the value that he saw in the community of practice. He noted the work experience component of the TLF gave the trainees some "real exposure to working in a professional environment." They would have to develop working relationships with adults in an environment outside of their academic, social, or family settings. In many cases, the trainees could gain a very real sense of responsibility, fostered by the realization and appreciation of the value that the sponsoring organizations placed on the duties and tasks that the trainees were assigned.

GL2 indicated over the past 3 years, several participating IT organizations noted that their involvement in the TLF program had made them "question how they developed

IT talent within their organizations." Some had shared with him that they even had reviewed some of their delivery models due to interactions within the TLF. GL2 also mentioned the organizations had found the "inquisitive nature of the trainees" often challenged decisions made by the organization. Often this challenge was in the form of the organizational leaders having to explain where the organization was in the adoption of some of the latest innovations.

Thematic Analysis

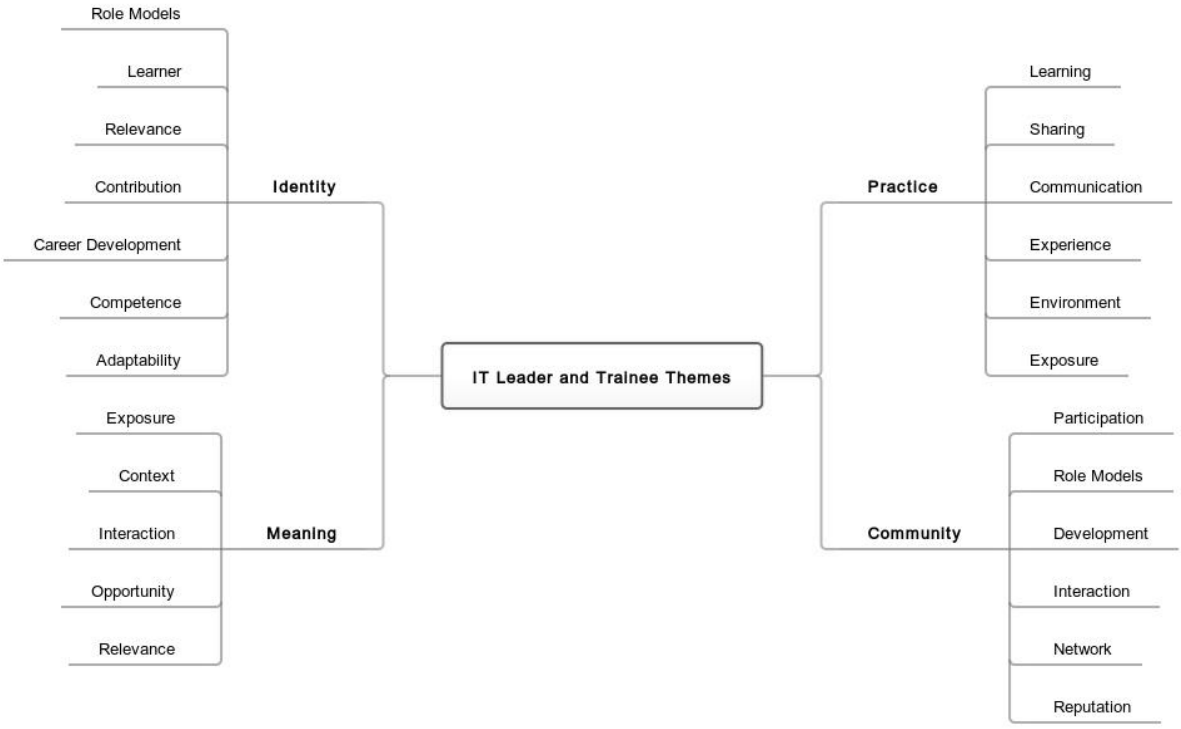
The transcripts were read and preliminary notes were made. Initial codes were identified. The codes related to interesting information according to IT leaders and former IT trainees. IT leader codes included career, potential, aptitude, exposure, conversations, exposure, encouragement, problem solving, reinforcement, access, contribution, environment, professionalism, maturity, communication, interaction, feedback, mentoring, networking and development. Former IT trainee codes included career options, aspirations, development, motivation, communication, teamwork, emulating, learning, understanding, confidence, experience, professionalism, development, relationships, access, sharing, opportunity and improvement. The codes were then reviewed in relationship to the sets of data that related to that code, and then grouped into themes across the groups.

The themes were analyzed through the theoretical framework of the social learning theory (Wenger, 2005). The process of developing themes required that data be broken down to explore the meaning and also to identify commonalities and relationships. This was particularly the case as the community of practice participants represented two stakeholder groups. The theme map is presented in figure 1.

The social theory of learning in the context of the study involved reviewing the themes in relationship to the four components of identity, practice, meaning, and community. Identity involved the notion that change in people is a result of learning (Goel et al., 2010). Practice necessitated learning by doing, which incorporated sharing and mutual action (Becerra et al., 2008; Wenger, 2005). Meaning was created through experience, while community required social structures that allowed participants to belong, create, and share (Baker-Eveleth et al., 2011; Li et al., 2009).

Figure 1

Themes Map



Document Analysis. Documentation, in combination with interview data, supports a complete picture of the phenomena being studied (Creswell, 2013; Merriam, 2009). Once collected, documentation must also be analyzed a manner that enhances the reliability and validity of the qualitative study (Riege, 2003). In order to provide a

convergence of evidence for this collective case study (Yin, 2009), frequency of terminology were counted in the two articles and the 2012 TLF Annual Report that were provided by the TLF leaders. Similarities and differences in each category were then identified, as shown in tables 3 and 4 (Altheide, 1996; Berg, 2009). The information was then compared with the themes identified through the thematic analysis process in order to integrate the findings from the interviews and the documentation sources.

Table 3

Data Frequency

Categories	**Codes**	**Frequency WCR, 2011**	**IT Career Guide, 2012/13**	**TLF Annual Report 2012**
Identity	Career	6	6	10
	Potential	3	0	2
	Environment	1	1	6
	Contribution	2	0	0
Meaning	Development	7	11	3
	Exposure	2	1	4
	Communication	1	1	10
	Motivation	3	3	1
Practice	Motivation	3	3	1
	Feedback	0	1	6
	Interaction	4	1	1
	Development	7	5	3
Community	Access	1	2	1
	Relationships	1	1	1
	Support	1	1	6
	Network	8	9	11

Table 4

Similarities and Differences

	Identity	**Extract**
Similarities	• Career Development	TLF was an open door for me into the industry, and I grasped the appropriate skills and competencies needed in this multi-faceted industry. I will walk away from this programme with experience, exposure, expertise and a connection to the IT community which will not only help me in my future endeavours, but broaden the scope of career choices within IT that combines and showcases all my talents
Differences	• Contribution	this is a programme for anybody who wants to start a career in IT
	Meaning	**Extract**
Similarities	• Development	Broadening of industry knowledge, development of a more all-round professional, preparing the individual for the real world, encouraging the further development of IT in Bermuda by "producing" new talent to the industry. Providing some level of assurance to the employer that if someone has graduated from the TLF program, that they are a high quality candidate – badge of excellence
Differences	• Motivation	I feel that in this day and age a lot of us forget that how people see you is how they will think of you
	Practice	**Extract**
Similarities	• Development	The employers are able to direct and shape the talent pool while they are still doing their studies.
Differences	• Feedback	a lot of information to process over the three weeks and it was often overwhelming
	Community	**Extract**
Similarities	• Network	You can acquire skills and learn concepts in

		isolation; however you cannot build relationships that way. I know more than a few professionals who are at risk of being left behind because they ignore this. TLF students are given direct access to years of IT experience during the program and after
Differences	• Support	TLF graduates complete our programme with well-rounded introductory ICT training, which allows businesses to be confident that our TLF students are self-sufficient and can hit the ground running with little supervision

Emergent themes: Experiences of participants regarding knowledge retention and transfer in the TLF. The unified themes that emerged from the research question and gathered through the thematic and document analyses were sorted through the lens of the social learning theory (Wenger, 2005). The identification of significant themes occurred under the four components of identity, practice, meaning and community. Figure 2 shows the themes in relationship to the storied lived experiences.

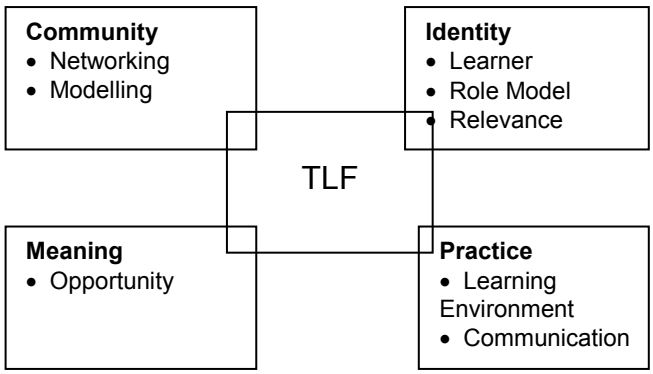


Figure 2. Emergent themes analyzed through the theoretical framework.

Identity: Learner. L5 provided insight into what the industry did to seed the development of the community of practice. The curriculum, in the form of modules developed and taught by industry professionals was one component leveraged by the

TLF. The goal was to continue to shape and refine the materials for optimal delivery. The development of the curriculum provided structure for both knowledge retention and transfer, but gave opportunities for instructors to share terminology and experiences.

Identity: Role models. Most of the leaders interviewed, and the related documentation, reflected that they did not believe the objective of the TLF was to develop future leaders. L1 stated,

> Obviously, you're not going to have people coming out of the TLF program and into a job and then becoming "a leader." But I don't think anybody can come out of any program now and come into a job and become a leader of any significance quickly. But what I do think the TLF does, which is what it was intended to do... broadening that knowledge base.

The TLF leaders did not believe they were creating leaders. They reported the important role of leaders as role models. L5 described leaders' role in the creation of the TLF, noting, "We were certainly trying to drive a technology initiative that came from local leadership and that imbued their views and philosophies on what was needed locally."

TLF trainees also recognized the benefit of having access to IT leaders. The six trainees interviewed spoke about role models identified through the program and how these professionals shaped their opinions on what a leader was. A senior role in an organization did not automatically make a professional a leader. Leaders had to offer something of themselves to encourage others to follow them.

Identity: Relevance. The community of practice trainees wanted to know that what they were learning would be relevant to their career development. The interaction

with the TLF leaders was therefore important to provide them with feedback, experiences, and expectations of what will be beneficial within the IT industry. Also, as T2 shared his thoughts, knowing the decision makers, many of whom were met through networking opportunities, could give a former trainee a foot in the door.

Understanding that the trainees were often outside of their comfort zone, the leaders endeavored to encourage work on their soft skills because they would find them beneficial in the future. L2 explained that networking was important. It often resulted in interactions where senior professionals would share their "love of their career" and trainees could then see similarities that they might build upon.

Depending on the work the trainee was able to perform during the summer, adaptability was a concern for some. L5 shared his thoughts:

> Hopefully, this is going to eventually filter into the education, the academic environment. A career in IT is not a slam dunk by just completing a couple of exams or getting a certification, but there's more nuance to it than that. I hope that we dispel some of the myths that were out there about the careers in IT and I hope that we're introducing some important awareness about what you need to do to be successful.

Practice: Learning environment. The trainees entered the program understanding they still had a lot to learn. T4 gave his background, having just graduated and searching for a job. The TLF gave him additional skills that he saw as an exposure to more of what the IT industry included. He believed that he learned a lot that he was able to take to his new job.

Learning by doing was an element mentioned in all the trainee interviews. The organizers of the community of practice felt it was critical to the success of the program and was the component that would keep some of the newly exposed IT disciplines in the minds of the trainees either when they returned to school, began their job search upon graduation or in their work experiences. L1 described his desire to offer a practical experience to the trainees in his module. In his course it was in the form of a demonstration in concert with a slide presentation. He shared that in the feedback that he received, some of the trainees mentioned that the demonstration struck a chord with them, encouraging them to want more information on the topic.

Trainees highlighted the various ways that they gained hands-on opportunities. Some spoke on the practical examples either demonstrated by professionals or performed by the trainees during the modules. Trainees T5, T6, and T3 explained how the team project required them to test some of the concepts taught in the classes. Trainees T1 and T2 described how they worked with professionals in their work placement companies and were required to use techniques on assigned projects that they had learned while shadowing the IT professionals on the job.

The learning environment within the community of practice was the safe area for innovation and growth. L5 highlighted a team project situation where there was a "weak contributor and one or two strong contributors" that ended up supporting and even helping to develop the weak contributor. He believed that within the team interactions he saw great leadership and maturity.

Practice: Communication. The trainees saw the importance of communicating and interacting with others within the environment. T6 described how motivating it was

to meet professionals who worked in their area of interest. In instances where one may be struggling to find their way, it encouraged them to battle on.

Even after leaving the program, T2 said he continued to use his networking skills. He saw that networking was beneficial to reaching the goals that he had set for himself. He felt more comfortable speaking to his CIO contacts about what it would take to become a CIO and looked forward to future networking events.

L2 spoke of the interactions that took place in the courses. There were knowledge transfers between the professionals and the trainees, which were expected. What they did not expect was the trainees interacting with each other and sharing university and work experiences. The different backgrounds and different educational levels gave access to a wealth of knowledge for trainees.

Interaction and communication was a constant theme through leader and trainee interviews. The participants spoke to these elements as priorities for technical development, leadership aspirations, team interactions, and skills that everyone believed beneficial. L5 explained that this development pays dividends or has an effect on "self-confidence and self-esteem" and their ability to be understood by others.

L4 also spoke to the benefits of developing communication skills to enable the sharing of tacit knowledge:

> I think [the activities in the TLF] gives them a structure. It makes them accountable. It increases their level of professionalism in the work environment: time keeping, communication skills, things that you don't learn at college.

T3 saw the benefits of communication for both the TLF leaders and the trainees, seeing it as the beginning of planning for the future. They believed that they were able to

learn about the field, what's required for specific jobs, and beneficial expertise. They were also aware that companies participating in the TLF were also thinking about succession planning.

TLF leaders were keen to consider the organizational culture they wanted to develop for their community, as they wished to engender a supportive environment for IT knowledge worker development and beneficial social interaction while considering their operational needs. L5 spoke to the situation,

> The TLF does have the ability to feed other ecosystems, if you will, whether it's the local business community, whether it's the local entrepreneur community, certainly, the local education community. There is enough going on there and as it grows and matures the information, the experiences are going to be of value to a variety of different players.

Meaning: Opportunity. Trainees valued the ability to work with, learn from, ask questions of, and develop relationships with IT professionals in the TLF. Context was an element that was critical to the opportunities that were available through and due to the TLF. T1 described how trying what she learned in the courses tied to the work environment in the work placement portion of the program. She was able to ask questions of experts who worked in these specialized areas as their full-time job. She found that the professionals that she interacted with both in the modules and at her work placement were patient and encouraged questions. This made working on projects that she was given more enlightening as she was able to secure a deeper understanding of what she was doing.

The leaders in the community of practice believed it important that the trainees understood why what they were learning was important to their career development. L2 reflected on a former trainee who was doing well in industry. The retention of knowledge gained from their TLF experience and the transfer of that knowledge to inform work activities and to other professionals in their work environment was an important program component. This type of knowledge retention and transfer experience was shared by both leaders and trainees.

L5 shared that no matter the needs of the participating organizations, the TLF creators were not guaranteed to increase the number of trainees interested in employment in the desired IT areas unless they also understood what was important to the trainees and their career development. L5 reflected that the TLF was not about delivering information without context. So while knowledge retention and transfer was important, the program was more than knowledge delivery.

L6 found the exposure within the TLF beneficial for the trainee that he eventually hired full time. He believed that the trainee was exposed the "real world [of] what it is like to be in IT." Exposure allowed a view into what the IT industry is and to focus on "what they want to be" and develop relationships that may evolve into mentorships.

The community of practice had a role in helping participants recognize opportunities. T1 described the confidence she felt while interviewing for a job after completing the program. She also considered it beneficial that the organization understood what TLF trainees could bring to the table.

L4 explained the change she saw in former TLF trainees due to their participation in the program:

> The fact that they participated, and it's such a difficult job environment, that that gave them an edge in getting a permanent full-time career because of their success. It qualified them in a different way. It's just not that they have a 3.5 grade point average, but that they excelled in TLF, that they became more of a valuable asset to a potential employer.

The development of a career versus the pursuit of a job was a distinction made in three fourths of the interviews. The desire to develop a career was seen as a mark of maturity due to the long-term decision making that it embodied. Discovering the career focus of many of the former trainees was impressive to leaders outside of the community of practice. L2 shared her perspective of what the TLF tries to instill in trainees as "the more you help, the more you do, the more you are noticed, and it's going to help you as you further your career."

Community: Networking. Networking was identified as a beneficial interaction opportunity for both leaders and participants. L1 saw the importance of providing interactions in the TLF program. He saw it engaged the trainees and encouraged them to make the connections to their possible role within industry. He explained that the ability for trainees to take material from the TLF experience and convert it into practice in the correct context on the job would also be a great benefit to many organizations.

Many of the leaders expressed the importance of participating in the TLF. L7 noted it is important for leaders to engage the TLF trainees in classes and discussion and develop mentoring relationships because it helps to enhance their knowledge and experience, which also benefits local IT companies when the trainees are hired by their organizations. L6 and L2 spoke from an altruistic perspective and the importance of

giving back to the community. L5 explained that participation was central to the success of the community of practice and that leaders should give of their time and knowledge put energy back into the community and developing the industry further.

Trainees found such access to industry leaders beneficial. T5 had great respect for those leaders and professionals who not only delivered course content, but provided direct access for one-on-one discussions, as he knew how busy they were and how time was tight in their daily schedules. T3 also commented on the level of access that he had to knowledgeable IT professionals and how he must also be equally as engaged to glean as much as he could from them. Upon reflection, T6 spoke about when she fully immersed herself in all that the program had to offer, she found that she got more out of the experience.

The community practice was an expanding network that grows in size each year. T2 recognized its importance as not just building knowledge, but building in a small community. Knowing someone as well as and knowing something can put TLF trainees ahead of a lot of other IT graduates and industry entrants.

Trainees did have to show their passion for their career choice. L1 talked about the type of trainee he liked to speak with within the community as ones who did not see IT just a job. T3 shared his thoughts about what organizations were getting from the community of practice "a glue for the IT community." In addition to a pool of talent, the participating organizations meet and interact with each other and work together more closely through the TLF events.

Community: Modelling. L1 also spoke about the need in the IT community for particular skills and the shortage of qualified talent. He then went on to explain that

school guidance counselors were not providing beneficial advice and someone needed to step forward to inform and groom students into what the IT industry required. Desired behaviors and activities were modeled within the TLF environment, encouraging the development of beneficial behaviors to be transferred into the participant organizations.

L5 shared that in promoting teamwork as a central component of the TLF program, it would aid in organizational knowledge transfer over time. Many IT professionals considered personal knowledge retention and protection is a key to job security and indicative of their value and indispensability within their organizations. L5 shared that the TLF worked to build knowledge transfer or "knowledge movement bridges across the collaborators in the TLF, but it continues to be a struggle in the workplace."

Summary

Chapter 4 included the research methodology applied in the study. Participants were identified through a purposeful homogeneous sampling. After a pilot test with a TLF leader and a former trainee, the interview questions were split into two sets: one for leaders and a second for trainees. Data saturation occurred after the analysis of four participant and four leader interviews. Five additional interviews confirmed that saturation of the themes had occurred, bringing the sample to 13. Conducting additional interviews with representatives from the various groups within the TLF served as data triangulation (Maria & Kiger, 2005).

The data analysis process for this social phenomenological study took place in two steps. The first step was creating descriptive summaries using Giorgi's (1997) phenomenological method. The lived experiences of the 15 participants included the

meanings identified by the participants. The summaries provided an understanding of social phenomena from an individual perspective before analyzing the socially constructed perspective in Step 2 (Schutz, 1967).

The second step included interpretatively obtaining themes from the data that answered the research questions and subquestions through the lens of the social learning theory (Wenger, 2005). The data analysis exposed a deeper understanding of the interorganizational IT community of practice. The lived experiences concerning knowledge retention and transfer uncovered themes of learners, context, hands-on experiences, and participation. Experiences relating to leadership generated themes of role models, exposure, communication, and modeling. The involvement in networking provided themes including relevance, interaction, communication, and development.

Upon leaving the community of practice, the themes experienced were those of contributor, career development, opportunity recognition, learning, and interaction. Benefits encountered were competence, opportunity, the learning environment, and the network. Difficulties were adaptability, relevance, depth of exposure and reputation. Chapter 5 will contain the conclusions and implications of the data findings. Chapter 5 also contains a discussion on recommendations for the interorganizational IT community of practice leaders and trainees as well as considerations for future research.

Chapter 5

Conclusions and Recommendations

In jurisdictions around the world, the population over the age of 65 continues to increase. By 2030, there will be approximately 72 million senior citizens in the United States (Landau, 2010). The retirement of skilled IT workers will be a risk for U.S. companies, with 33% of IT jobs being or becoming vacant due to retirees or workers about to retire (Frey, 2010). Knowledge retention and transfer practices are essential to efficient IT operations but are often deficient within many organizations (Buckley & Giannakopoulos, 2011; Carraway, 2011).

Skilled IT knowledge workers have many options to access career growth opportunities due to the global need for IT talent and widespread outsourcing programs (Qu et al., 2011; Whitaker et al., 2010). The Bermuda marketplace is no different. The requirement for experienced IT professionals appears to be constant, and IT knowledge worker turnover is a threat to knowledge retention and transfer in organizations across industries (Buckley & Giannakopoulos, 2011; Hokanson et al., 2011). New hires require training and time to bring them up to the level of a departed professional (Gallagher et al., 2010). The cost to hire and train IT professionals has been estimated up to 700 times a worker's hourly wage (McKeown, 2011). Organizational leaders often need to bring talent to the island from overseas, which increases this turnover cost. Local IT leaders require an understanding of the elements that restrict knowledge retention and transfer and of the actions that could, perhaps collaboratively, develop beneficial solutions.

Leader and trainees of an interorganizational IT community of practice in Bermuda called the TLF provided a viewpoint on their lived experiences of the TLF

Internship Program through their interview responses and personal reflections. The meaning ascribed to the participants' lived experiences in the community of practice was formed individually to establish and then merge their experiences. Their social interactions and their individual belief systems combined to develop an environment beneficial to knowledge retention and transfer activities (Bird, 2009; Kim & Berard, 2009; Schutz, 1967). An examination of participant experiences was valuable in understanding their actions, networks, and behaviors that may be beneficial to organizational leaders, IT teachers, and professionals developing a career in IT (McWilliam et al., 2009; Schutz, 1967). Chapter 5 includes the presentation of conclusions developed from the data analysis process and the implications of the conclusions and recommendations to stakeholders and researchers.

Conclusions and Implications

Triangulation was pursued through collecting data from three groups of stakeholders within the TLF (Homburg et al., 2012; Maria & Kiger, 2005). A two-phase data analysis included thematic analysis and document analysis (Altheide, 1996; Braun & Clarke, 2006). Narratives of the experiences of each of the 15 cases were presented. Braun and Clarke's thematic analysis process was used for the interview data collected. Document analysis was performed on two articles and the TLF 2012 Annual Report (Altheide, 1996). The shared themes were analyzed for shared meaning and an evaluation of the interorganizational IT community of practice (Berg, 209; Braun & Clarke, 2006). Conclusions resulted from the leaders' and trainees' accounts of their lived experiences and the document analysis, which provided deeper understandings pertinent to the research questions.

Thematic conclusions. The eight themes identified through the thematic analysis provided greater insight into the TLF community of practice, the role it played in knowledge retention and transfer for its members and an understanding of the different perspectives of the trainees and leaders (Berg, 2009; Yin, 2009). In the consideration of the theme *learner*, the TLF structure was an environment for the trainees to learn about the IT industry and what IT leaders required from IT professionals (Technology Leadership Forum, 2012). The TLF encouraged the transfer and retention of knowledge from leaders to the participants, with the end benefit of better prepared hires for their organizations and the Bermuda IT industry as a whole (Darvish et al., 2010).

The themes of *role model* and *modelling* provided an avenue to leaders from the member organizations to develop skills with the IT community that would be beneficial to the trainees and their organizations (Bevan, 2011). The leaders' participation in the TLF both motivated and reinforced desired characteristics in the trainees (Kislov et al, 2011). Such actions sustained the theme of *relevance* as the knowledge sharing within the community of practice shed light on the areas of greatest need within the IT community (Darvish et al., 2010). Additionally, the combination on theoretical and practical work experiences ensured many aspects of the knowledge management spectrum (Binney, 2001).

The theme of *learning environment* highlighted how the community of practice aided in the fostering of innovation and learning (Probst & Borzillo, 2008). Learning is a foundation and includes both single- and double-loop learning (Yeo, 2008). The TLF was beneficial for knowledge creation and sharing, providing access to tacit knowledge (Senapathi, 2011). *Communication* was critical as social interaction and ba, a shared

space for knowledge creation and evolution, would be beneficial for knowledge retention (Nonaka & Nishiguchi, 2001; Nonaka & von Krogh, 2009). Communication was integral to socialization as tacit knowledge was able to be shared through apprenticeship or mentorship relationships (Bratianu, 2010).

The theme of *opportunity* was meaningful for trainees, as they valued the ability to work with, learn from, ask questions of and develop relationships with the IT professions in the TLF (Wenger, McDermott, & Snyder, 2002). While the opportunity for the trainees was often an introduction into a career in IT, the longer term implications for the leaders was the enhancement of the IT industry over time (Cha et al., 2008). Social influence stimulates movement, as illustrated through Roger's diffusion of innovations model (Ainamo, 2010). *Networking* within the TLF was a beneficial interaction opportunity for both leaders and trainees and also was a method to obtain knowledge (Ainamo, 2010).

Research questions conclusions. Data collected from digitally recorded interviews with six trainees and seven leaders who participated in an interorganizational IT community of practice were analyzed to explore two research questions and three subquestions:

R1: What are the lived experiences of participants regarding knowledge retention and transfer in the interorganizational community of practice?

R1a: What are the participants' experience of leadership knowledge retention and transfer in the interorganizational community of practice?

R1b: What are the participant experiences of networking within the interorganizational community of practice?

R2: What are the experiences of the participants upon leaving the community of practice?

R2a: What are the benefits and difficulties as experienced by participants?

The thematic analysis and conclusions have been related to the research questions in order to further explore the conclusions for the study.

R1 conclusions: Environmental rudiments. The analysis of the two research questions and three subquestions occurred through the lens of social learning theory (Wenger, 2005). Three themes emerged from the lived experiences of participants regarding knowledge retention and transfer in the TLF trainee internship program. Conclusions from the themes supported the environmental rudiments of the interorganizational IT community of practice, defining the needs-based, interactive, and expansive nature of the construct. The themes embodied aspects of ba, specifically the concepts of originating, systemizing, dialoguing, and exercising ba (Bratianu, 2010).

Needs based. The TLF internship program resulted from IT leaders' need for skilled IT talent in Bermuda-based ICT organizations. The impetus communicated through the trainees' lived experiences was a need for experience in the IT industry and a need for employment after graduation. The need for TLF leaders was the result of a shallow talent pool.

The cross point where the needs of the two groups merged provided the opportunity for the creation of a fluid interorganizational IT community of practice that benefited the Bermuda ICT community. The need data was reflected through organizational participation and trainee engagement. Knowledge retention and transfer activities were often communicated from the organizational perspective of promoting the

opportunities that knowledge in a particular discipline would provide. Optimal trainee retention and transfer aligned with interests and the practical nature of the instruction. Skills gained through dialoguing and systemizing ba could be seen as beneficial as they were elements to develop both tacit and explicit knowledge (Nonaka & von Krough, 2009). The ideal results were realized in trainees who we were inspired in a particular subject area, were immediately available to pursue an available opportunity, and had aptitude for growth in the participating organization. This program developed knowledge predominately for the bottom of the organization, but the strategy developed by TLF leaders was one of longer term organizational development in the Bermuda-based IT industry (Cha et al., 2008).

Interactive. The need for and benefits of an interactive environment was embedded in the lived experiences of the study participants. This was particularly important for the trainees, as the interactivity through practical experiences, networking, and work shadowing aided in knowledge creation, retention, and transfer within the community of practice. Both leader and trainees described multiple instruction methods to engage the trainees. These actions represented the use of ba, which usually involved developing explicit knowledge in the trainees (Bratianu, 2010). Leaders also described the importance of changing the instruction methods to ensure optimal knowledge transfer could ensue.

The interactive environment was also a testing ground for the participating organizations. The TLF trainee environment and culture differed from many of the TLF member organizations' environment and culture. Bringing former TLF trainees these organizations sometimes initially resulted in conveying some aspects of the community

of practice's culture the organization. This view of systematizing ba indicated that participating organizations were looking to develop ways to convert tacit into explicit knowledge (Salleh, 2010). This appeared to be a beneficial by-product of the environment created within the interorganizational IT community of practice. Other participating organizations might not realize the benefit as the strength of their organizational cultures might diffuse the impact of a new hire that has come from the TLF trainee experience (Salleh, 2010).

Expansive. Trainees came into the interorganizational IT community of practice expecting to receive work experience and classroom instruction. These expectations were in line with dialoguing and exercising ba (Bratianu, 2010). The lived experiences indicated the expansive nature of the environment, illustrating aspects of the concept of originating ba, giving some access to the tacit knowledge of the participating TLF leaders and professionals (Senapathi, 2011).

The expansive nature of the program allowed experiences to inform life lessons through communication, motivation, culture, and leadership styles (Salleh, 2010). In addition to stories of skills gained and IT disciplines explored, there were important stories about attributes gained. Trainees had rich experiences related to the attributes of respect, professionalism, communication and teamwork. These experiences created and provided access to knowledge through the interactions within the program (Nonaka & Takeuchi, 1995).

R1a conclusions: Differing perspectives. Communities of practice afford an opportunity for knowledge retention and transfer in the broader view of the social theory of learning (Cowan, 2012; Wenger, 2005). The subquestion of whether leadership

attributes were transferred and retained indicated different perspectives regarding the occurrence of such activities. Although TLF leaders might use the interorganizational IT community of practice to enhance knowledge exchange and enable organizational retention of knowledge (Acuna, 2010; Haarmann et al., 2009), each of the leaders perceived the benefit to leadership development differently, while trainees saw it as a part of the experience. Upon analysis of the lived experiences of the study participants, the TLF program evidenced the development of intellectual capital to manage and leverage knowledge and competence (Cochran, 2011). The two themes that emerged from the subquestion were the definitions of leadership and the support of emergent leadership characteristics in the interorganizational IT community of practice.

Leadership definitions. The development of the community of practice by Bermuda-based IT leaders was a good illustration of what a leader does in practice: managing knowledge, skill, talent, and education through the human, structural and consumer constructs (Bejinaru & Iordache, 2011). The strategic role of the TLF program was to develop skills within the IT community that would help their organizations cope with change (Bevan, 2011; Cloud, 2010; Kotter, 1999). The origins of the TLF program, and the interaction at the chief executive level of member organizations helped to define the problem and develop a vision to navigate the continuing fluctuations in the sector.

Upon creation of the community of practice, the continued involvement of many of the leaders allowed trainees to see many leadership attributes through their interactions. They were able to regularly demonstrate the development of future intellectual capital was important to strategic knowledge management for their IT organizations (Amri et al., 2010). This interaction motivated trainee career planning. All

the trainees believed through the development of their communication skills, exposure to the big picture of the role of IT senior management and participation and responsibilities for team projects that their leadership skills were being developed.

Although leaders might have these attributes, holding these attributes does not make one automatically a leader upon completion of a program. Most of the leaders noted the trainees were not receiving training in leadership skills. Although some leaders did agree that some leadership attributes were cornerstones of the community of practice, those attributes could also be important for any professional at any level in their career development. According to Stewart's (2001) process for managing intellectual capital, these behaviors would benefit participants ultimately in coordinating, transferring, and creating knowledge.

Support of emergent characteristics. Although the leaders involved in the interorganizational IT community of practice may have disagreed that they were developing the next generation of IT leadership, many did communicate that they supported the development of leadership attributes that emerged in some of the trainees. The inclusion of team projects allowed the trainees to exhibit both leadership and managerial characteristics (Kotter, 1999), which allowed the trainees to leverage intellectual capital, whether codified or experiential (Stewart, 1999). The mechanisms many of the leaders described to support emergent leadership characteristics included access, mentorship, and job opportunities, whereas the environment provided a supportive environment for intellectual capital to flourish (Němeček & Kocmanová, 2011).

R1b conclusions: Personal development. Communities of practice are favorable environments for working with others, reinforcing desired characteristics, and sharing knowledge (Kislov et al., 2011). The TLF ensured there were opportunities for collaboration to develop interprofessional and interorganizational relationships, allowing for the motivation and diffusion of knowledge (Baker-Eveleth et al., 2011; Wenger, 2005). Networking opportunities occurred in the classroom, on the job, at networking events, and throughout the team projects to help in developing trainee identities and to encourage knowledge sharing (Kislov et al., 2011). Although uncomfortable for many of the trainees, networking appeared to provide a foundation for great personal development.

Beneficial structure. The interorganizational IT community of practice allowed the leaders to develop a beneficial structure between their individual organizations that allowed them to evolve the systems, skills, and technologies used on an annual basis to motivate trainees in the IT sector and to encourage them to explore IT disciplines in which they have great need for talent (Cloud, 2010). This resulted in trainee experiences differing year to year as the program changed due to feedback received. TLF leaders and trainees evolved the environment, developing a unique social identity, organizational culture, and shared purpose (Wang & Ramiller, 2009; Wenger 2005). The structure grew in recent years to include former trainees coming back into the community of practice to teach and mentor new trainees, enabling both single- and double-loop learning (Yeo, 2008).

There was a desire from TLF leaders for mentor and mentee relationships to develop in the IT community through the TLF. There were a few stories of the origins of

such relationships, often initiated through personal development opportunities. These social relationships allowed for knowledge exchange on a more personal level (Kislov et al., 2011). While these mentorship relationships were important, also of interest were mentorship relationships initiated by the trainees. Trainee initiated mentorship relationships with leaders appeared to be associated with their career goals and the desire to attain leadership roles.

*Boundary breaking***.** There was evidence that the interorganizational IT community of practice gave some participating organizations access to talent that helped to make the organizations more agile. Agility involved the breaking of some boundaries to access resources and innovative solutions (Kislov et al., 2011). TLF trainees were often provided opportunities within TLF member organizations due to the abilities the trainees demonstrated within the community of practice. When hired, former trainees may have had limited experience in the role but had a known aptitude to learn quickly.

Although there was some boundary breaking within leader organizations, there was more evidence within the interorganizational IT community of practice. The TLF was able to enhance the environment to allow for the mobilization and diffusion of knowledge (Baker-Eveleth et al., 2011; Wenger et al., 2002). Whether it was access to senior-level IT executives or the degree of control given to the trainees for their team projects, the leaders developed an environment that would result in exposure to much of what the IT sector had to offer and a launch pad for personal development. With such a structure, there was also an inherent risk that leaders could not control all the interactions within and outside of the community of practice (Benn & Martin, 2010). The leaders

seemed to value the possibility of chaos in some instances as a beneficial learning experience.

R2 conclusions: Career boost. Since the launch of the TLF program in 2009, the trainees have had a challenging economic environment to consider as they prepare for graduation from the program and, in some cases, their job search. The TLF trainees were very aware of what was going on in the IT sector, from outsourcing to working for multiple organizations to further one's career (Qu et al., 2011; Tambe & Hitt, 2010). Many former trainees were a part of the community of practice either shortly before or after graduating from university and used the experience to transition into the working world. TLF trainees had to manage their knowledge to their best benefit within the TLF experience. Many provided stories that embodied elements of the four-looped knowledge management model as described by Darvish et al. (2010).

Priorities. Many of the leaders described the trainee program as exposing participants to the IT areas of greatest need. Exposure to a needed area might result in organizations finding a resource that could be developed. The resource could then through the sharing of knowledge to the application of that knowledge could meet organizational needs (Darvish et al., 2010). What was more common at this stage was trainees taking shared knowledge and applying it on the job. It appeared that the purpose of the interorganizational IT community of practice was being realized so some degree, but only time would tell.

The ideal situation where a former trainee would return to school and augment his or her studies to a subject that would meet industry needs did appear to be an exception and not the rule. The ability to change one's studies appeared related to where the trainee

was in his or her education. The organization of knowledge gained through the TLF to create new knowledge with additional study and future experience was a great benefit to trainees and the IT organizations (Darvish et al., 2010). As those trainees interviewed were recent graduates, the purpose shared by most for participating in the program was to secure a job. In cases where they had secured employment, trainees appeared comfortable to explore the various subject areas but also needed to prove themselves by organizing and applying knowledge to enhance their value. It was also when the former trainees would speak of their career development.

Expectations. A collective expectation of leaders and trainees was that the interorganizational IT community of practice would result in a pool of IT resources for the sector in Bermuda. This talent pool could leverage shared knowledge gained through the TLF as well as educational and work experiences to meet the most critical needs of the IT organizations (Darvish et al., 2010). Given the history of the TLF, there was consensus that the program was already resulting in a pool of talent. The talent was considered by some as the cream of the crop, applying knowledge while also creating new opportunities for the member organizations. Not everyone shared this assertion, which would undoubtedly take more time to be able to be proven within industry.

R2a conclusions: Complexity. In a sense, the interorganizational IT community of practice was constructed to leverage the complexity of the IT sector. The leaders had created an environment that encompassed multifaceted interactions in varying conditions in a short timeframe because that was what the real world was like (Yaghoubi et al., 2011). Like the knowledge management spectrum described by Binney (2001), the TLF developed an environment to understand and provide benefit to the member

organizations. Over a 13-week period, participants therefore experienced an intense immersion into the business realities in multiple organizations.

Relevant experiences. The relevance of the trainees' experience to their future career development and job prospects was of major concern. For the leaders, the goal was to have trainees performing meaningful projects at their work assignment while gaining exposure and learning theory about critical IT subject matter. This embodied the asset management, process-based, and developmental components of the knowledge management spectrum (Binney, 2001).

Although intentions were good, the TLF could not guarantee relevant experiences. Whether it was due to a lack of skills to work with or a match that did not work, TLF leaders indicated the aptitude of the trainee was important. For trainees, the knowledge management spectrum elements experienced were predominantly process based and developmental in nature (Binney, 2001). The trainees wanted meaningful work where they could gain practical experience.

Good impressions. A good impression could result in the beginning of a great career. An ideal result was a positive impression during the TLF program that would secure the trainee a place in an organization where they would be developed through a process. This process might intersect with the organization's succession planning, representing developmental and innovation or creation components of the knowledge management spectrum (Binney, 2001). Good impressions were often identified through enhanced communication skills and confident interactions.

TLF developed an interorganizational IT community of practice that allowed trainees to engage and impress the TLF leaders. For trainees, that had both advantages

and disadvantages. The most memorable trainees worked the environment to their advantage. Those who did not do as well were almost an afterthought. In such cases, the experiences described were representative of asset management along the knowledge management spectrum (Binney, 2001). Trainees did receive instruction on soft skills such as presenting and networking and customer service, which might have leveled the field to a degree. However, as trainees with negative experiences did not volunteer for the study, this element was not assessable from a different perspective. It still was not clear whether success was guaranteed by making a good impression or by exhibiting aptitude for the subject matter.

Study Implications

The stories shared by the study participants revealed many interesting findings. As the findings were reviewed and synthesized into conclusions and implications, a greater understanding and appreciation for the work of all involved in the TLF developed. Although the nature of the volunteer sample resulted in a number of positive reflections, the resulting stories created a picture of the community that the TLF had created. Developing the study implications involved taking a further step to expand the meaning into a broader application.

The development of study implications involved a review of the data analysis activities in relation to the research problem, purpose, and questions. A review of the Chapter 2 literature review was also beneficial in the exploration of the implications of the research conclusions. The development of implications occurred through two phases. First, a log of expected findings was developed from the Chapter 2 literature review, literature gaps and research questions, which allowed for a comparison with unexpected

findings from the descriptive summaries that were mapped according both to the type of participant and by question. Second, the findings were reviewed for peripheral outcomes that might enrich the inferences made from the study.

Implications about organizational agility through the ability to leverage knowledge assets emerged from the findings. Evidence of skills development, competence, acquisition, and value appeared at the individual and collective analyses, indicating that improved organizational agility allowed the TLF interorganizational community of practice to cope with complexity in the business environment (Bejinaru & Iordache, 2011; Senge, 2006). Implications initiated from this focus were as follows:

1. Although TLF might be an incubator to develop processes and procedures to enhance knowledge retention and transfer strategies and activities, alignment with organizational frameworks may be beneficial to aid in fostering organizational change. Aligning knowledge retention and transfer strategies with organizational frameworks helps participants to respond quickly to environmental change (Almahamid et al., 2010). Whether through trainee participation, best practices, or respected change management methods, it would be beneficial to have a mechanism to help desired change take root in their respective organizations (Drucker, 2009).
2. The access provided to community of practice participants over time should extend across each organization's IT functions, allowing organizational transformation to take place at a more rapid pace (DeLong, 2004). IT professionals involved in the community, as instructors, for networking, and as mentors, developed a relationship with community of practice trainees to

show them what a career in IT entails (Bratianu, 2010). That access was important at all levels of the IT organization, not just for trainees, to encourage greater undertakings within existing establishments, organizational learning and to be the basis for a beneficial environment for growth.

3. The basis of the community of practice was education. The industry professionals who work in the field controlled instruction in the desired IT disciplines. They were able to provide insight into the important aspects needed to contribute to their organizations, allowing for the diffusion of knowledge through numerous methods (Birkinshaw & Sheehan, 2002).
4. Resources are critical for the success of the interorganizational community of practice. Funding was necessary to provide access to optimal facilities, tools, and top-rate instruction. Time was necessary to craft a meaningful experience for each trainee. Access to a variety of industry environments provided a level of exposure that was beneficial to both the trainees and the individual organizations. All these elements are considered boundaries that affect agility (Kislov et al., 2011).

Recommendations

The lived experiences of participants of the TLF interorganizational IT community of practice provided implications for the IT leaders, their organizations, the trainees, and related educational institutions. Five recommendations were developed to cultivate the benefits of the knowledge retention and transfer attributes of the TLF program further as a result of the research. The recommendations indicated possible

directions for the advancement of the community that might result in comprehensive change to its operation.

Build partnerships with schools. The origins of the TLF stemmed from the perception of the lack of student exposure to IT disciplines most needed by organizations. A hybrid of educational, team, and IT industry uses of communities of practice (Baker-Eveleth et al., 2011; Denning & Frailey, 2011), the TLF program is a collaboration by members of the IT industry to innovate their knowledge management strategies. While the concepts of knowledge retention and transfer varied from leader to leader, the bare bones concepts were well understood by the trainees. Shaping the development of IT talent at an early stage was deemed beneficial by both parties.

At the technical, college, and university level, there is a great opportunity to develop partnerships that might tie into the quality experiential environment that the TLF leaders have created. The TLF already works closely with the Bermuda College and have initial linkages through industry contacts to Microsoft Caribbean, Research in Motion and Cisco Academy. Developing relationships with respected colleges and universities overseas with strong IT programs of study, such as Stanford, MIT and University of Edinburgh, may result in access to more robust educational modules which unite with the practical experiences that would be beneficial to trainees, IT organizations, and IT professionals.

Partnerships at the high school level might also be of primary benefit to the technology teachers in the community. As they are generally teaching to a prescribed curriculum, interaction with TLF leadership might result in the identification of meaningful content and interactions to enhance the learning environment. Finding ways

to help teachers to reinforce the necessary elements for a successful career in IT might help to guide students to schools and organizations that would benefit them.

Alumni engagement. The TLF alumni are beginning to provide a pool of talent that is accessible to the Bermuda-based IT community. TLF alumni are also giving back to the TLF by teaching courses, helping with team projects, and being mentors to current trainees. These elements allowed for the TLF program to evolve through innovation and learning (Probst & Porzillo, 2008; Yeo, 2008). The opportunity for greater return on investment exists if a more robust alumni program was developed to assist, track, and use the talents of the former trainees.

Involving alumni in the continued evolution of the community of practice also helps to ensure the quality of the program (Smith et al., 2007). Each new graduating session increases the depth of the talent pool. The quality of future graduates sways the perception of the program's progeny as a whole. It is in everyone's best interest that the cream of the crop become TLF trainees who then succeed in the workplace.

Organizational engagement. The TLF has created a community with IT leaders and professionals with expertise who are able to share their knowledge and with trainees chosen through an application and interview process. This relatively small community grows through the interaction of the participants within the community of practice and in the respective organizational business environments (Wang & Ramiller, 2009). Within the organizations, some IT professionals might see the program as just another training program that has the support of upper management. They may also see the program as a threat if they are of the mindset discussed in the literature gaps in Chapter 2, where the

professional is reluctant to share. It is important to draw these professionals into the TLF as they can also benefit from the interaction with senior IT professionals.

The TLF might evolve to encourage the adoption of beneficial activities for both knowledge retention and transfer that IT professionals from TLF member companies have tried within the program. The senior IT professionals might create stronger lines of communication with their staff and across the local marketplace. Improved communication could result in elements such as reduced turnover and increased revenues through stronger relationships (Haarmann et al., 2009). The TLF offers one of many methods that can aid organizational learning. Positive experiences through the participation in the TLF interorganizational IT community of practice may also influence other technical communities, which in turn may also provide some benefit to organizational learning in non-TLF organizations.

Program enhancement. The TLF program changes annually. There were two communicated methods for change. The first was instructor-led as instructors developed their courses based on best practice and methods to engage their audience. Feedback from the trainees was the basis for the second method for change. Both activities represent knowledge management activities that leverage knowledge to solve problems (Bettoni & Eggs, 2001). A more in-depth pursuit of feedback from participants in the interorganizational community of practice should be pursued with TLF trainees, as well as employers, coworkers, and teachers, providing both positive and negative experiences. An analysis of the feedback and an amalgamation of concepts might result in innovative approaches to enhance knowledge creation, sharing, retention, and transfer.

Leadership. The TLF should formalize discussions on leadership. At a minimum, the discussion of management versus leadership would be beneficial for trainees (Kotter, 1999). Analysis on leadership styles and attributes would play an important role in individual career development and interactions in the workplace environment. In consideration of the importance of the development of mentorship relationships, providing a view into leadership might enhance some of these interactions.

Professionalism. The TLF also has the opportunity to continue to shape beneficial behaviors of future IT knowledge workers. Observation, mentoring, and relationships were methods used for knowledge sharing (Li et al., 2009). Through the soft skills courses, trainees develop an understanding of the importance of customer service, communication, and sales. An opportunity exists for these trainees to learn about professionalism, and in turn humility, respect, and competence. A hybrid approach would be most beneficial to expand into this line of interaction, which might have a role in organizational knowledge retention and transfer strategies (DeLong, 2004).

Practicum. Resources and work placement opportunities aside, the greatest value of the program was giving trainees the chance to apply theory they have learned into practice. Even if other IT professions monitor that practice well, the lessons learned by trying something are invaluable. The TLF needs to create more opportunities for practical experience (Darvish et al., 2010), which might require that instructors include a practical component for each course or request that the trainee project encompass a case study with an applied module. Partnerships with educational institutions might benefit this element, providing access to space and tools.

Replication in other jurisdictions. Bermuda might be a unique jurisdiction in many respects, but the situation faced by the IT sector is mirrored around the world. IT is an essential part of both businesses and people's everyday lives. Entrants to the field need expertise to do the work that ensures that their organizations could run optimally (Denning & Frailey, 2011; Mastracci, 2009). Since 2002, the number of students pursuing computing degrees worldwide has diminished (Denning & Frailey, 2011).

Through collaboration across the IT industry in Bermuda, the TLF has brought IT leaders together to affect change (Haarmann et al., 2009). Many organizations have benefited through the hiring of competent IT staff members and an indication of their aptitude for growth. The TLF program has the potential to be used elsewhere. The components that constitute the TLF interorganizational community of practice provide the ingredients to meet similar goals in other jurisdictions. As the IT world is increasingly global, the formation of additional interorganizational communities of practice might expand the networks of Bermuda-based organizations and trainees.

Limitations

Since I have had involvement in the TLF, I had to mitigate the biases in the analysis process to enhance the dependability, confirmability, credibility, and transferability of the analysis (Lincoln & Guba, 1985; Riege, 2003). This was accomplished by the use of rich coding and analysis processes and reflexivity through the journaling throughout the research process during the study (Drucker-Godard, Ehlinger & Grenier, 2001; Riege, 2003). Explaining and describing in detail the tools that were used for analysis, the analysis strategy and steps taken increased credibility and dependability (Riege, 2003; Roberts, Priest & Traynor, 2006). I also aimed to enhance

the case study through the exploration of comparisons and contrasts between the leaders and former trainees (Drucker-Godard, Ehlinger & Grenier, 2001; Riege, 2003).

The documents used for the document analysis were textual in nature and were either analytical or providing a leader or former trainee's opinion. The use of presentations, charts and videos could have been used if access had been provided to such materials by the TLF. Additionally, The TLF leaders provided their 2012 Annual Report but did not give me access to the annual reports from the inception in 2009, which may have illustrated further the evolution of the intergoranizational IT community of practice.

The document analysis, and in particular the content analysis is theoretically not as data rich as interview analysis (Berg, 2009). However, the focused document analysis helped to develop a more vibrant case study in combination with the other data collection method (Merriam, 2009). Using the findings from the interview exercises aided in the development of categories and codes for the content analysis (Altheide, 1996).

The stance of the researcher in document analysis is unobtrusive (Merriam, 2009). However, some bias could be exhibited in the selection of documentation as I was given access to information that was relevant to the timeframe of the interviews (Berg, 2009). Additionally, the document analysis of the data could be considered somewhat biased due to the use of pre-set coding developed from the interview analysis (Altheide, 1996; Berg, 2009).

Expansion of the Scope of the Community of Practice

Action items for the TLF members to consider include elements that might expand the scope of the interorganizational IT community of practice.

1. It would be beneficial for TLF members to identify educational institutions that produce the caliber of trainee desired by their IT organizations, which might include a review of the content of the IT degree and certificate programs at the identified educational institutions to enhance their offerings. The TLF might also wish to partner with particular institutions that relationships might be forged through alumni who have been TLF trainees, such as the University of Edinburgh, Carnegie Mellon and the New England Institute of Technology. There would be significantly higher resource implications for doing so, compared to the trainee program, but they might provide educational opportunities to Bermuda students and assist in increasing the local pool of talent.
2. If the TLF members were to open communication channels with administration and faculty to identify opportunities for collaboration at the high school and tertiary levels, there might be an opportunity to guide more local students down the IT career path. The resource implications and the collaboration that would be necessary with the education system might be onerous. Due to the size of the Bermuda school system at the middle and senior school level, exploring this option might be a worthy endeavor.
3. Due to the need for specialized IT expertise and the difficulty of finding apprentice and even trainee opportunities in difficult economic times, alternative and innovative training models could be beneficial. TLF organizations might collaborate to create concepts for practical experience that can occur outside the corporate environment. IT professionals within the

community might leverage their networks to encourage organizations external to Bermuda to become testing locations, encouraging local professionals to experiment with emerging technologies.

4. Encouraging the growth of the TLF community to include more than just the development of trainees might include an assessment of the needs of participating organizations on a regular basis in relation to industry needs in general. Identifying, developing, and adding additional programs that meet other organizational needs could encourage IT professionals who do not have an interest in the trainee program to join the TLF.
5. In the case of the increasing number of TLF trainee graduates taking IT roles within the Bermuda business community, the TLF members may wish to develop a program to track and engage former trainees. The program could help to measure and assess the trainee program over time. The program also allows the TLF to identify opportunities for alumni participation in the summer program, ensuring direct interaction with current trainees.
6. TLF alumni participation is also important in the evolution of the TLF community as alumni may develop into leadership and expert practitioner roles with the industry. Their career development and mind-set, developed through the collaborative way in which they were introduced into the industry, might bring some innovative and radical ideas to the future direction of the Bermuda-based IT sector.
7. As TLF trainees have identified an interest in leadership, it would be beneficial in the long term to develop a leadership course or exposure

opportunity to introduce trainees to the concept, styles, and attributes of leaders. Such a course might include an element that identifies the components required for increased mentor–mentee relationships within the IT industry. Occasions to create opportunities to transfer tacit knowledge and expertise within the TLF community might also evolve from such actions.

8. The size of Bermuda's IT community might allow for the classification of the components of the TLF to be transferrable to other industries and jurisdictions. Leaders of companies with a global footprint might wish to ascertain the resources required to initiate a pilot in their primary industry or in another jurisdiction. Initiating a pilot would necessitate the identification of needs in jurisdictions where participating organizations have a presence. This would allow the organizations to customize the trainee program to build in program champions.
9. It might be beneficial to perform a benchmarking study to ascertain the applicability of the Bermuda-based TLF practices to other comparable jurisdictions and other technology communities of practices that may be association based. Exploring this avenue might also present opportunities to develop corporate and educational relationships to fund and support other programs.

Suggestions for Further Research

The findings of the research study extended the understanding of the lived experiences of participants of an interorganizational IT community of practice. Initial assumptions, related to knowledge retention and transfer within the TLF, were examined

while practices employed within member organizations did not result in the same depth of data that was provided for the TLF program. Time constraints, availability of participants willing to take part in the study and the degree to which they shared their stories provided a compelling picture of the interorganizational IT community of practice, but it was not a complete picture. The study revealed opportunities for further research. Examining the stories of leader and trainees both inside and outside of the community of practice would add to the study outcomes. Insights and experiences of corporate leaders, educators, policy makers, guidance counselors, entrepreneurs, parents, and human resources professionals could also impact the direction of student IT career development.

IT permeates both personal and professional lives. Technology has become easy to use and has shorter and shorter life cycles (Denning & Frailey, 2011). Researchers often focus on the importance of technology use in the classroom, particularly from the instructional perspective (Kirkscey, 2012; Wahab, Rose, & Wati Osman, 2012). Research to develop a further understanding of methods to encourage more students to pursue computer science degrees within the Bermuda context is necessary. Many students pursue networking and Web design degrees because of their practical experiences prior to choosing a degree program. Conducting phenomenological research with high school and college students to determine what motivates decisions to pursue computer science career paths might be beneficial to high school teachers, guidance counselors, and parents.

The IT sector has many communities of practice to meet the needs and responsibilities of various disciplines that fall within the sector (Cowan, 2012; Wang & Ramiller, 2009). Knowledge workers continue to develop their area of skill and

competence through certifications and continued professional development, as they provide services to their organizations or to clients (Damien, Fong Boh, Ang, & Slaughter, 2012; Denning & Frailey, 2011). It would be beneficial to explore the potential for the TLF's interorganizational community of practice to assist the former trainees in the choice and pursuit of either a certification path or a master's degree level of study. The relationship between learning, career development, and success would be an interesting research path.

The TLF leaders need to capture and use the tacit knowledge from their knowledge workers and transfer that knowledge to others to ensure organizational objectives could be met (Rizzuto, 2011; Shannak et al., 2012). Most IT professionals appreciate that their tacit knowledge has value (Broucker, 2010). Mentorship relationships appear to be a successful tool for career development and knowledge transfer (Joo, Sushko, & McLean, 2012). It would be interesting to examine over time the relationship between TLF trainee alumni, their mentorship relationships, and their TLF-based mentee career success.

Summary

The purpose of the qualitative phenomenological study which evolved into a collective case study was to gain a deeper understanding of knowledge retention and transfer practices within an IT interorganizational community of practice and the further application of those practices within participant organizations. The study included data obtained from interviews of seven IT leaders, six former IT trainees and two government leaders. The study involved exploring knowledge retention and transfer as a phenomenon experientially lived in a social environment, identified as an

interorganizational IT community of practice. Based on the data analysis, the findings revealed useful information for IT leaders, professionals, and IT centered on the importance of knowledge retention and transfer.

Often leaders do not know how to practically organize the flow of knowledge within their organizations (Drucker, 2009). Also, their IT professionals frequently are in control of their own development (DeLong & Davenport, 2003). In IT, communities of practice, often interorganizational in form, develop around particular disciplines and certification programs (Quan et al., 2007). The exploration of knowledge retention and transfer within such communities of practice was a fascinating study topic.

Communities of practice provide an avenue for knowledge retention and transfer in the broader view of the social theory of learning (Wenger, 2005). Organizational leaders might use communities of practice to enhance knowledge exchange and enable organizational retention of such knowledge (Acuna, 2010; Haarmann et al., 2009). Communities of practices are mechanisms that leaders might use as innovative means to share both explicit and tacit knowledge (Hakanson, 2007; Thoenig & Verdier, 2010).

Communities of practice help to provide access to intellectual capital (Baker-Eveleth et al., 2011; Wenger, 2005). The linkage of intellectual capital and communities of practice to knowledge retention and transfer indicated a formal program had the ability to afford experiential opportunities with lessons to be learned, knowledge-sharing prospects, and an environment for the formation of new knowledge (Salem, 2007; Stewart, 1999). Meaning makes knowledge retention significant to organizations as new knowledge is created through work experiences, but the transfer of meaning is more difficult to share with others (DeLong, 2004; Juliano, 2006).

The research study resulted in themes that established the importance, intricacy and beneficial nature of the interorganizational IT community of practice. The themes of learner, role model and relevance were important in the notion that the TLF used learning to change people (Goel, Johnson, Junglas, & Ives, 2010). Learning through experience created meaning and the theme of opportunity was imperative for this element (Becerra, Lunnan, & Huemer, 2008). The themes of communication and the learning environment enhanced and aided learning through doing, including sharing resources and viewpoints, along with mutual action (Wenger, 2005). Finally, the TLF allow individuals to belong, create, and share what they have learned as identified in the themes of networking and modelling (Baker-Eveleth et al., 2011; Li et al., 2009).

The research study findings indicated that lived experiences of participants regarding knowledge retention and transfer in the interorganizational community of practice benefitted by environments that were needs based, interactive, and expansive. The participants' experience of leadership knowledge retention and transfer in the interorganizational community of practice indicated differing leadership perspectives of the participants and activities that supported emerging leadership characteristics. The participant experiences of networking exemplified that personal development of trainees was reinforced by a beneficial structure and the boundary-breaking nature of the interorganizational IT community of practice (Kislov et al., 2011). Upon exiting the community of practice, trainees were looking for a career boost as their priorities and expectations reflected their need for employment. Finally, the benefits and difficulties as experienced by participants demonstrated the complexity of the interorganizational IT

community of practice, embodying a continuing need for relevant experiences by trainees while also making good impressions within the Bermuda-based IT sector.

The study of participant experiences in an interorganizational IT community of practice to understand knowledge retention and transfer practices indicated the challenges that leaders face in the IT industry to develop tacit knowledge in IT professionals (Acuna, 2010; Senapathi, 2011). The findings revealed the development of innovative practices through the interorganizational community of practice as participants worked toward a shared purpose (van Baalen et al., 2005; Wenger et al., 2002). Additional partnerships with schools and with alumni would provide additional avenues to advance the work of the community of practice. Enhancing leadership, professionalism, and practicum development opportunities would also be beneficial to the participants. Replication of the model elsewhere might also be a logical next step.

At the beginning of this study, the need for organizations to leverage their knowledge in innovative (Drucker, 2009) ways drew the researcher to this interesting interorganizational IT community of practice. Through the lens of social learning theory, the researcher discovered that IT requires a complex support network to keep the innovations coming to the marketplace and business environments. The shared stories of all the participants reinforced the importance of development and belonging.

The implementation of the recommendations of this study may aid in the fostering of the benefits of the knowledge retention and transfer qualities of the TLF program in a number of areas. Partnerships with schools at both the high school and college levels may support both students and teachers. Alumni should have a role in the continued evolution of the TLF to safeguard the quality of the program (Smith et al., 2007). The TLF must

continue to engage the IT community so that they can recognize and reap the benefits of the knowledge retention and transfer within the community of practice. The continued enhancement of the program is of benefit to all of the TLF stakeholders and for the country of Bermuda in the long term.

This study plays a role in furthering the body of knowledge in this field by extending the lens of investigation to a small island jurisdiction that due to its size could be seen as an ideal laboratory for examining knowledge retention and transfers in an interorganizational community of practice. Evidence of skills advancement, aptitude, acquirement, and importance appeared through the interview and document analyses, signifying that enhanced agility across organizational boundaries allowed the TLF interorganizational community of practice to manage complexity in the Bermuda business environment. Coupling knowledge retention and transfer strategies with beneficial organizational enhancement through mentoring, development and assessment aids the organizations and the trainees to respond quickly to change in the IT setting. Such agility inspires greater undertakings within the IT industry, and demonstrating a model which might be replicated in other Bermuda-based industries and jurisdictions. Organizational learning, initiated through an interorganizational community of practice, could be the basis for a beneficial and focused growth leveraging valuable skill sets of the respective workforce in the business environment. As one of the Bermuda Government leaders shared in their interview, the TLF played an important role in "testing and stretching" the TLF trainees' "minds and creative dexterity" and engaged IT talent who were willing to "create new boundaries" in the work environment. The TLF represents a

“beneficial two way street for information exchange” that helped to stretch “both the students and the organizations’ capabilities”.

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Appendix A

Request for Informed Consent Form

Dear ,

My name is Marisa Stones and I am a student at the University of Phoenix working on a Doctor of Management degree in Organizational Leadership. I am doing a research study entitled Knowledge Retention and Transfer in an IT Community of Practice: Leader and Former Participant Perspectives. The purpose of the research study is to gain a deeper understanding of knowledge retention and transfer practices within an IT interorganizational community of practice and the further application of those practices within participant organizations.

Your participation in this study is voluntary at all times. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. Once the participant notifies the researcher that they wish to withdraw during any stage before, during or after the research study, either via email, written letter, or verbal communication, the researcher will destroy either by deletion of digital files or shredding of physical material the participant's information from the study. Once completed, the participant will be sent correspondence stating that this has been done. In the case of withdrawal after the providing data for the study or after the study, the data attributed to the participant's code will be isolated and removed from the data analysis process. The results of the research study may be published but your identity will remain confidential and your name will not be disclosed to any outside party.

Your participation will involve taking part in an interview about your experience with knowledge retention and transfer in the TLF Internship Programme. The interview approach is a conversation with the researcher listening to your stories of your experiences. The researcher may ask some questions during the conversation to gain a deeper understanding. The interview conversation will be recorded, then transcribed. The researcher will show you the transcribed interview to be sure that what is recorded is what you intend to say and get your permission to use it in the study.

In this research, there are no foreseeable risks to you. Although there may be no direct benefit to you, a possible benefit of your participation is that your stories of knowledge retention and transfer in the TLF Internship Programme may provide better understandings to leaders, educators, students and community members about ways to develop future IT leaders.

If you have any questions concerning the research study, please call me at xxx-xxx-xxxx or e-mail me at xxxxx@email.phoenix.edu. For questions about your rights as a study participant, or any concerns or complaints, please contact the University of Phoenix Institutional Review Board via email at IRB@phoenix.edu.

As a participant in this study, you should understand the following:

1. You may decide not to be part of this study or you may want to withdraw from the study at any time. If you want to withdraw, you can do so without any problems.
2. Your identity will be kept confidential.
3. Marisa Stones, the researcher, has fully explained the nature of the research study and has answered all of your questions and concerns.
4. If interviews are done, they may be recorded. If they are recorded, you must give permission for the researcher, Marisa Stones, to record the interviews. You understand that the information from the recorded interviews may be transcribed. The researcher will develop a way to code the data to assure that your name is protected.
5. Data will be kept in a secure and locked area. The data will be kept for three years, and then destroyed.
6. The results of this study may be published.

“By signing this form, you agree that you understand the nature of the study, the possible risks to you as a participant, and how your identity will be kept confidential. When you

sign this form, this means that you are 18 years old or older and that you give your permission to volunteer as a participant in the study that is described here."

(☐) I accept the above terms. (☐) I do not accept the above terms. (CHECK ONE)

Signature of the interviewee _____ Date _____

Signature of the researcher _____ Date _____

Appendix B

Interview Form

Date: _____ Time: _____

Participant #: _____ Company #: _____

1. Briefly tell me about your progression in the IT field.
2. What was your experience in deciding to participate in (or apply to) the Technology Leadership Forum (TLF)?
3. How would you define knowledge retention?
4. Tell me about your experience with knowledge retention in the TLF.
5. What was your knowledge retention experience in your organization?
6. How would you define knowledge transfer?
7. Tell me about your experience with knowledge transfer in the TLF.
8. What was your knowledge transfer experience in your organization?
9. Tell me about the information you believe is valuable to your work that you cannot get from books or manuals.
10. What was your experience with how this information was provided to new IT professionals through the TLF?
11. Tell me about how this information is provided to new IT professionals in your organization.
12. What is your experience with methods used to transfer valuable experiences in the TLF?

13. What is your experience with methods used to transfer valuable experiences in your organization?
14. Tell me about your experience with the TLF enhancing knowledge retention and transfer in your organization.
15. What was your experience with improved knowledge retention and transfer between TLF leaders and trainees?
16. What was your experience with TLF trainee integration into an organization upon completion of the program?
17. Tell me about your perception of the TLF as a leadership development program.
18. With TLF graduates in the community, what was your experience with the ways that the IT community and IT trainees have benefitted from the program?
19. Tell me how you think that the TLF helps IT trainees become future IT leaders.
20. Tell me how you think that the TLF helps IT organizations navigate changing business environments.

Appendix C

Thank You Letter

Date

Dear ,

Thank you for your time and participation in my research study titled *Knowledge Retention and Transfer in an IT Community of Practice: Leader and Former Participant Perspectives.* I appreciate your willingness to take part, as I know that your time is valuable.

The purpose of the research study was to gain a deeper understanding of knowledge retention and transfer practices within an IT interorganizational community of practice and the further application of those practices within participant organizations. Your participation was valuable to my research. I will send you a copy of the transcript of the interview for you to review for accuracy. Upon conclusion of the study, I will send you the results of the research.

If you have any questions concerning the research study, please call me at xxx-xxx-xxxx.

Sincerely,

Marisa A. J. Stones

xxxxx@email.phoenix.edu

Appendix D

Informed Consent: Premises, Recruitment and Name (PRN) Use Permission

University of Phoenix®

PREMISES, RECRUITMENT AND NAME (PRN) USE PERMISSION

Technology Leadership Forum

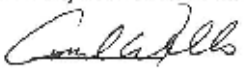
Name of Facility, Organization, University, Institution, or Association

Please complete the following by check marking any permissions listed here that you approve, and please provide your signature, title, date, and organizational information below. If you have any questions or concerns about this research study, please contact the University of Phoenix Institutional Review Board via email at IRB@phoenix.edu.

☒ I hereby authorize Marisa Stones, a student of University of Phoenix, to use the premises (facility identified below) to conduct a study entitled Knowledge Retention and Transfer in an IT Community of Practice: Leader and Former Participant Perspectives.

☒ I hereby authorize Marisa Stones, a student of University of Phoenix, to recruit subjects for participation in a conduct a study entitled Knowledge Retention and Transfer in an IT Community of Practice: Leader and Former Participant Perspectives.

☒ I hereby authorize Marisa Stones, a student of University of Phoenix, to use the name of the facility, organization, university, institution, or association identified above when publishing results from the study entitled Knowledge Retention and Transfer in an IT Community of Practice: Leader and Former Participant Perspectives.



03/09/2013

Signature Date

Coral Wells

Board Member

Technology Leadership Forum

72 Spanish Point Road

Pembroke, HM02

Bermuda

Appendix E

Reordering of Interview Questions

Original	Leader	Trainee
1. Briefly tell me about your progression in the IT field.	1. Briefly tell me about your progression in the IT field.	deleted
2. What was your experience in deciding to participate in (or apply to) the Technology Leadership Forum (TLF)?	2. What was your experience in deciding to participate in the Technology Leadership Forum (TLF)?	1. What was your experience in deciding to apply to the Technology Leadership Forum (TLF)?
3. How would you define knowledge retention?	3. How would you define knowledge retention?	2. How would you define knowledge retention?
4. Tell me about your experience with knowledge retention in the TLF.	4. Tell me about your experience with knowledge retention in the TLF.	3. Tell me about your experience with knowledge retention in the TLF.
5. What was your knowledge retention experience in your organization?	5. What was your knowledge retention experience in your organization?	4. What was your knowledge retention experience in your organization?
6. How would you define knowledge transfer?	6. How would you define knowledge transfer?	5. How would you define knowledge transfer?
7. Tell me about your experience with knowledge transfer in the TLF.	7. Tell me about your experience with knowledge transfer in the TLF.	6. Tell me about your experience with knowledge transfer in the TLF.
8. What was your knowledge transfer experience in your organization?	8. What was your knowledge transfer experience in your organization?	7. What was your knowledge transfer experience in your organization?
9. Tell me about the information you believe is valuable to your work that you cannot get from books or manuals.	deleted	deleted
10. What was your experience with how this information was provided to new IT professionals	deleted	deleted

through the TLF?		
11. Tell me about how this information is provided to new IT professionals in your organization.	deleted	deleted
12. What is your experience with methods used to transfer valuable experiences in the TLF?	11. What is your experience with methods used to transfer valuable experiences in the TLF?	10. What is your experience with methods used to transfer valuable experiences in the TLF?
13. What is your experience with methods used to transfer valuable experiences in your organization?	12. What is your experience with methods used to transfer valuable experiences in your organization?	11. What is your experience with methods used to transfer valuable experiences in your organization?
14. Tell me about your experience with the TLF enhancing knowledge retention and transfer in your organization.	deleted	deleted
15. What was your experience with improved knowledge retention and transfer between TLF leaders and trainees?	deleted	deleted
16. What was your experience with TLF trainee integration into an organization upon completion of the program?	14. What was your experience with TLF trainee integration into an organization upon completion of the program?	13. What was your experience with TLF trainee integration into an organization upon completion of the program?
17. Tell me about your perception of the TLF as a leadership development program.	9. Tell me about your perception of the TLF as a leadership development program.	8. Tell me about your perception of the TLF as a leadership development program.
18. With TLF graduates in the community, what was your experience with the ways that the IT community and IT students have benefitted from the program?	16. With TLF graduates in the community, what was your experience with the ways that the IT community and IT students have benefitted from the program?	15. With TLF graduates in the community, what was your experience with the ways that the IT community and IT students have benefitted from the program?
19. Tell me how you think that the TLF helps IT trainees become future IT leaders.	13. Tell me how you think that the TLF helps IT trainees become future IT leaders.	12. Tell me how you think that the TLF helps IT trainees become future IT leaders.

20. Tell me how you think that the TLF helps IT organizations navigate changing business environments.	17. Tell me how you think that the TLF helps IT organizations navigate changing business environments. 10. What was your experience with leadership development of TLF participants 15. How do you think that the TLF Internship Program can add value to other areas of the participant's lives?	16. Tell me how you think that the TLF helps IT organizations navigate changing business environments. 9. What was your experience with leadership development due to the TLF Internship Program. 14. How do you think that the TLF Internship Program can add value to other areas of the participant's lives?

Appendix F

Leader Interview Guide

1. Briefly tell me about your progression in the IT field.
2. What was your experience in deciding to participate in the Technology Leadership Forum (TLF)?
3. How would you define knowledge retention?
4. Tell me about your experience with knowledge retention in the TLF.
5. What was your knowledge retention experience in your organization?
6. How would you define knowledge transfer?
7. Tell me about your experience with knowledge transfer in the TLF.
8. What was your knowledge transfer experience in your organization?
9. Tell me about your experience with the TLF enhancing knowledge retention and transfer in your organization.
10. Tell me about your perception of the TLF as a leadership development program.
11. What was your experience with leadership development of TLF trainees?
12. What is your experience with methods used to transfer valuable experiences in the TLF?
13. What is your experience with methods used to transfer valuable experiences in your organization?
14. Tell me how you think that the TLF helps IT trainees become future IT leaders.
15. What was your experience with TLF trainee integration into an organization upon completion of the program?

16. How do you think that the TLF Internship Program can add value to other areas of the participant's lives?
17. With TLF graduates in the community, what was your experience with the ways that the IT community and IT trainees have benefitted from the program?
18. Tell me how you think that the TLF helps IT organizations navigate changing IT business environments.

Appendix G

Trainee Interview Guide

1. What was your experience in deciding to apply to the Technology Leadership Forum (TLF) Internship Program?
2. How would you define knowledge retention?
3. Tell me about your experience with knowledge retention in the TLF.
4. What was your knowledge retention experience in your organization?
5. How would you define knowledge transfer?
6. Tell me about your experience with knowledge transfer in the TLF.
7. What was your knowledge transfer experience in your organization?
8. Tell me about your perception of the TLF as a leadership development program.
9. What was your experience with leadership development due to the TLF Internship Program?
10. Tell me how you think that the TLF helps IT trainees become future IT leaders.
11. How do you think that the TLF Internship Program can add value to other areas of the participant's lives?
12. With TLF graduates in the community, what was your experience with the ways that the IT community and IT trainees have benefitted from the program?
13. Tell me how you think that the TLF helps IT organizations navigate changing IT business environments.

AUTHOR BIOGRAPHY

Marisa Stones, raised in Hamilton Parish, Bermuda, is a graduate of The Berkeley Institute. She graduated in 1996 from Spelman College as a Psychology major, with a minor in Business. After working for a start-up company in Massachusetts, she entered the Entrepreneurial MBA program at the F. W. Olin Graduate School of Business at Babson College. Her coursework and consulting experience at Babson exposed Marisa to the fields of Information Technology, Organizational Behavior and Strategy. Upon her graduation in 1999, she returned to Bermuda. Over the last 15 years she has worked in both the public and private sectors, focusing on Information Technology, Policy Development, Innovation and Entrepreneurship.